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ABSTRACT

Concerned with the application of science and technology to agriculture, this book is intended to be used as a reference for rural education groups and as a guide for teachers in an attempt to formulate a new approach to teaching rural economics by integrating it into the overall analysis of social and economic development. The book is divided into two parts with an introduction that presents a discussion of the inequalities in development. Part I analyzes the relationship between agriculture and underdevelopment. A discussion of the historical development precedes the following three chapters of part I: (1) Traditional agricultural societies and their transformation; (2) the socioeconomic organization of agriculture in the less developed countries; and (3) overall underdevelopment and agricultural underdevelopment. Part II analyzes the relationship between agriculture and development. A discussion of the structural representation and process of economic transformation precedes the four chapters of part II which include (1) the contribution of agriculture to growth; (2) the role of agriculture in bringing about development; (3) agricultural development strategy; and (4) the relative decline and transformation of agriculture. Each chapter is followed by revision exercises, check tests, and topics for group discussion. A list of the major international statistical yearbooks, growth and development indicators for selected countries, and answers to the exercises are appended. (BM)

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# Agriculture and the development process

## Tentative guidelines for teaching

by L. Malassis

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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# Preface

The publication of this important work, *Agriculture and the Development Process,* is an event of some significance for, in spite of the abundant literature produced on economic development and even on the role of agriculture, there are very few studies by people like Louis Malassis, who is both agronomist and economist. With a few notable exceptions, chiefly among heretical critics or those on the fringes of orthodoxy, economists have displayed little interest in *res rustica* and have remained practically uninfluenced by the work of agronomists, no matter how relevant the latter may have been.

What does this volume set out to do? Its sub-title *Tentative Guidelines for Teaching* brings us back to the province of Unesco and to its concern with the application of science and technology to agriculture. This volume is not a teaching manual as such: it is intended more as a reference document for teaching purposes, a sort of guidebook for people who, at different educational levels, are called upon to devise teaching programmes designed to train officials, responsible for planning and its implementation, to tackle the problems of agriculture and agricultural development and of the role of agriculture in over-all economic development.

Although he states that he has taken his own ideas into consideration, Professor Malassis' work is by no means a mere enumeration of his views. I would even go so far as to say that, in his desire to come to the aid of future teachers and instructors who have to acquaint their students with the language and techniques of planning and agriculture, he has not done justice to the original contributions which some authors, and most notably he himself, have made.

The fact of the matter is that the science of economics has yet to reach the stage where a science becomes what Condillac called a well-articulated language. Discussions between economists are often clouded by the different connotations they place on identical expressions. Any criticism of established doctrines or acknowledgement of the limitations of economic model-building—which is the basic tool in any approach to the problems of development planning—must begin by challenging implicitly normative ways of looking at things (F. Perroux, 1970). In the presidential address he delivered on 29 December 1970 to the American Economic Association, entitled 'Theoretical Assumptions and Non-observed Facts', Wassily Leontieff, who cannot be taxed, any more than François Perroux, with ignorance of the contribution models have made to the advance of economic techniques, made a number of extremely important points, at the same time paying special tribute to rural economists:

> An exceptional example of a healthy balance between theoretical and empirical analysis and of the readiness of professional economists to cooperate with experts in the neighbouring disciplines is offered by Agricultural Economics as it developed in this country over the last fifty years. . .

> Close collaboration with agronomists provides agricultural economists with direct access to information of a technological kind. When they speak of crop rotation, fertilizers, or alternative harvesting techniques, they usually know, sometimes from personal experience, what they are talking about. Preoccupation with the standard of living of the rural population has led agricultural economists into collaboration with home economists and sociologists. While centering their interest on only one part of the economic system, agricultural economists demonstrated the effectiveness of a systematic combination of theoretical approach with detailed factual analysis. They also were the first among economists to make use of the advanced methods of mathematical statistics. However, in their hands, statistical inference became a complement to, not a substitute for, empirical research.

If only we could feel that, one day, all economists everywhere, or even all rural economists, will really deserve that tribute.

But, in our present situation, where the techniques of action have outstripped the science that they ought to be based on and where economic policy is all the more necessary because economic science is still at the incoherent stage, it is imperative to strive for clarification, so that all those concerned with economic policy can at least speak the same language.

In past centuries, medicine suffered much the same experience. The practitioners of the day could not wait for Claude Bernard, Pasteur and the founding fathers of modern physiology to lay the scientific foundations of their work before treating their contemporaries, sometimes with a measure of success. If we are here today, it is because they managed to keep some of our forebears alive until they begot the ancestors from whom we are descended.

Perhaps the term 'economic growth' as we now define it will one day suffer the same oblivion as the 'morbid humours' of Molière's characters. But it is not without value—on the contrary, it is essential—that we should all know what is implied by the criteria we use to measure such growth.

It is this difficult task—far less exhilarating than criticizing classical theories and adducing material to illustrate those one favours oneself—that Louis Malassis has here undertaken. His experience of teaching, particularly at the Institute of Mediterranean Agriculture in Montpellier, has shown him that this task is a feasible as well as useful one.

In order to assist colleagues who may be faced with problems which he has had to solve himself, each chapter is followed by revision exercises, check tests and topics for group discussion. Equipped with these reference tools, any teacher or community leader can build up his own course of lectures or produce his own manual.

Not only does this in itself provide justification for the service rendered by Unesco in publishing this volume; it is also evident that no other agency, whether inside or outside the United Nations family, could have commissioned a work of this nature.

All organizations committed to development owe a deep debt of gratitude to Louis Malassis and to Unesco for the services this book will render them.

Michel Cépède
*Independent Chairman of FAO*

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# Main abbreviations used

| | |
|---|---|
| DCs | developed countries |
| DC(M)s | developed countries with a market economy |
| DC(P)s | developed countries with a planned economy |
| LDCs | less-developed countries |
| GDP | gross domestic product |
| $GDP_c$ | gross domestic product at factor cost |
| $GDP_m$ | gross domestic product at market (current) prices |
| GDPA | gross domestic product (agriculture) |
| GDPI | gross domestic product (industry) |
| GDPT | total gross domestic product |
| GFCF | gross fixed capital formation |
| GNP | gross national product |
| *IWP* | *Provisional Indicative World Plan for Agricultural Development* (FAO) |

*Note on bibliographical references*

References in square brackets relate to the 'Reference Works' listed in the bibliography at the end of the volume.

# Foreword

The need to devote more attention to the training and utilization of human resources, without which economic and social development would be impossible, becomes particularly acute in instances where rural populations are involved, especially in the developing countries. All hope of increasing agricultural production and yields depends on stepping up the pace of technical progress; and for that purpose the extension and qualitative improvement of teaching are essential, as they are for removing the obstacles which, owing to the inadequate development of education, are a drag on the well-being and advancement of rural societies throughout the world.

The work on education and rural development done by Unesco and other Specialized Agencies of the United Nations, including the International Labour Organisation (ILO) and the Food and Agriculture Organization of the United Nations (FAO), culminated in the convening of a first World Conference on Agricultural Education and Training, which was held in Copenhagen, Denmark, in 1970 under the joint auspices of FAO, ILO and Unesco. In the conference's recommendations, stress was laid on the need to collect additional information about the problems involved in education and rural development, to examine these problems more closely, to study the structures of agricultural education and teaching systems being used in rural areas, to arrive at better definitions of education levels and to clarify the terminology used. Another idea which emerged clearly was that contemporary trends in regard to the organization of agricultural education, teaching methods and teacher training should be highlighted.

In 1971, in accordance with the resolutions of its own General Conference and the recommendations of the World Conference on Agricultural Education and Training, Unesco published a comparative study on agricultural education in Asia, which is to be followed by similar studies on other regions of the world. In an endeavour to provide its Member States with more detailed information, it has also decided to commission a series of studies on individual countries, as well as a number of works aimed at shedding light on the relationships existing between education—or a particular aspect of education—and rural development.

This volume comes within the last-named category of publications. It has been entrusted to Professor Louis Malassis, an agronomist, economist and educationist who is thoroughly acquainted with present-day problems. We wish to take this opportunity of thanking him for having agreed to accept the undertaking, thus enabling Unesco to offer an invaluable tool to agricultural experts, community leaders and teachers in the agricultural world and, in a broader context, to all those whose task it is to lead their country along the path to development.

The selection and presentation of the material contained in this volume and the opinions expressed are the sole responsibility of the author and do not necessarily correspond to the views of Unesco.

The designations and form of presentation employed do not imply the expression of any opinion whatsoever on the part of the Unesco Secretariat concerning the legal status of any country or territory, or of its authorities, or concerning the delimitation of its frontiers.

# Preamble

*A major problem.* The unequal pattern of development is considered the major social and political problem of our time. The official declarations of leading international and national figures, the speeches of representatives of formerly colonized and now politically independent countries, the pronouncements of moral and religious authorities, televised debates, the work of economists and sociologists and so on all emphasize that the situation is 'humanly intolerable' or 'politically explosive', that the misery in which some peoples are engulfed is 'undeserved' and, above all, that it could probably be avoided.

The uneven pace of development throughout the world became a major social and political phenomenon the day that world public opinion became aware of it, and especially when it was realized that poverty was not due to any avarice on the part of Nature but rather to ignorance coupled with unsuitable socio-economic structures.

The inequalities in development have been highlighted by the plotting of development scales based on appropriate indicators such as *per capita* product, income consumption and so on. The countries of the world have been split into two basic groups which, depending on inspiration and ideology, are qualified respectively as rich and poor, or as developed and underdeveloped, or else as advanced and backward. A substantial number of pages have been written about the poverty of nations, the Third World, the proletarian countries, etc.

However, awareness of the state of underdevelopment does not only imply an awareness of world disparities; fundamentally, it entails acceptance of the fact that the existence of underdevelopment is scandalous because development can be achieved.

If poverty is not due to the avarice of Nature, or to man's fall from grace after disobeying the Almighty, but rather to our institutions and our ignorance, then the struggle in favour of development and education can be waged on the basis of objective research, collective endeavour and clearly stated political aims.

Inevitably, the struggle for development is a relentless battle in which all nations and the entire world fabric are engaged. It is therefore a political struggle. From this standpoint, it can be seen that the battle also arises out of the conflict of social and political philosophies, the attempts to impose different systems and to achieve power and the triumph of 'just causes'.

It is not always easy to be 'reasonable' in such circumstances and there is always a danger that dogma will override doubts or that prescribed doctrine will take precedence over endeavours to keep theory open to all currents of thought in a perpetual effort to compare and re-appraise as necessary preliminaries to progress. The danger is a real one, for several reasons: the basic statistics are often lacking; international methods of comparison do not facilitate objective classification; development theories are still in their infancy and are not sufficiently refined; development itself is a complex historical process whose comprehension calls for the formation of interdisciplinary teams; finally, the practice of development requires a sense of commitment. In spite of these difficulties, we feel it is necessary to state quite clearly that in order to obtain a proper understanding of development it is essential to embark on a lengthy and difficult process of objective analysis embracing all existing currents of thought.

*Key words*. Since development is one of the major problems of the socio-political philosophy of our time, certain terms, such as 'development', 'growth' and 'progress', have come to be very widely used in both specialized and more general literature. We shall begin, therefore, by giving some thought to the real meanings behind these key words. Economists have borrowed the terms 'growth' and 'development' from biology. With the passage of time, all living organisms increase in size, in volume and in weight—in other words, they grow. But the dimensional change is accompanied by structural changes, some of them particularly important in that they correspond to critical periods or stages of growth. For example, the growth of a cereal (as measured, say, by its height) is accompanied by a process of structural change, or development, marked by critical biological periods during which such major transformations as germination, spearing, thrusting and earing occur. Biologists can thus describe plants at suitably chosen moments of growth (stages) and, above all, they can analyse the biological mechanisms by which plants change from one stage to another (processes).

Using this analogy, we can define economic growth (dimensional change), development (structural change), stages of growth or of development (starting-up, maturity, mass consumption, etc.) and the processes of growth and development (transitions from one stage to another).

Analogies, however, can be misleading in that they may give an over-simplified picture of reality even though they can also help us to grasp certain basic economic phenomena which are useful to us in our analyses. Moreover, specific difficulties can arise from analogies between natural and human phenomena since the former are largely subject to determined processes, whereas man has the ability to invent new processes and open up new paths leading to development and growth.

Economic growth is usually defined by the increase in certain representative economic aggregates over a period of time. In order to illustrate such growth, it is necessary to select the aggregates, draw up time series, determine trends and calculate annual rates of variation for a given period, or rates of growth. To determine what causes growth, it is necessary to study the relationships between the increase in production and the factors entering into such production, i.e. labour, capital and progress. Growth is not due solely to an increase in the number of workers or in the capital available per worker; a better utilization of labour and of capital, or an increase in the productivity of these factors—one means of measuring technical progress—also have to be taken into account. The progress measured in this way is therefore a component of growth. A progressive society is a society that is capable of creating and propagating progress.

Nor is growth derived only from quantitative relationships between production and factors of production; it occurs within actual, historically and geographically determined societies and sustained growth involves a process of social change.

Development can thus be analysed as a process of change bound up with growth. Hence the problem is to identify the essential aspects of the socio-economic structure and the basic variables. 'The ways in which men live and produce', in other words the socio-economic forms in which production is organized, define modes of production or socio-economic systems. But the modes or systems do not all have the same aptitude for development and furthermore do not all stem from the same socio-political philosophies.

The use of international comparisons to define growth indicators can make it possible to draw up a socio-economic typology but this geographical approach generally leads back to history. In fact, contemporary economic societies can only be fully understood by analysis of historical processes. In a large number of countries, indigenous societies have been transformed by Western penetration and the outcome has been specific socio-economic structures marked by the co-existence, side by side, of 'grafted' economies and transformed indigenous economies, hence by a dualistic structure which is often acknowledged as a typical feature of underdevelopment.

Growth and development are interdependent. At a given moment in time, a particular socio-economic pattern can facilitate growth but this, in turn, will alter the socio-economic pattern itself.

Growth is fostered by a society which shows itself capable of identifying and utilizing its natural resources, creating employment and increasing its supply of capital, devising and propagating new methods and tools and giving its workers a sense of motivation and the entire population a feeling of self-respect and independence. The form of socio-economic system may also be instrumental in slowing down or inhibiting growth. If the reasons why a society stimulates growth or, on the contrary, stifles it are determined, one of the major question marks hanging over development theory will have been removed.

Growth, progress and development are thus intertwined phenomena which can only be completely understood by seeking out and explaining their interdependence.

*Integrated agricultural development.* Agriculture is the most important economic sector in the less-developed countries and it is usually called upon to play a fundamental role in the over-all socio-economic development process.

The concept of integrated agricultural development means viewing agriculture not as a separate sector but rather as a branch of the economy completely integrated into the development process and contributing to the fulfilment of the objectives which society as a whole has set itself.

Agriculture and the over-all economy, rural society and society as a whole, are bound together by ties of interdependence. In certain circumstances, agricultural growth helps set in motion over-all economic growth, but since such growth causes an increase in the number of non-agricultural jobs and in the demand for foodstuffs, as well as the production of agricultural implements, agriculture itself undergoes a transformation.

Traditional societies were built up on the basis of agricultural societies, of whatever form—semi-feudal, communal or other. These societies were acted on by external forces (Western penetration), resulting in the 'commercialization' of their subsistence economies (by the promotion of exports) and the subsequent transformation of what had been traditional agricultural societies.

It is to the interdependence of over-all and agricultural socio-economic phenomena that we must look for an explanation for the structures and functions of agriculture. In other words, there is no purely agricultural explanation for agriculture.

Historically speaking, inasmuch as agriculture has played the role of a labour pool for growth purposes, the agricultural population can be described as being residual, and the density of the agricultural population is an important factor in explaining the working of production systems, an explanation which is ultimately based on over-all development and growth rates.

Economic growth leads to an increase in the demand for foodstuffs (as a result of the increase in the non-agricultural population, and in *per capita* income) and also an increase in the level of international trade. And in the last resort the total demand for agricultural produce determines the intensity of agricultural production and the extent to which the agricultural sector is commercialized. In 'pre-industrial' societies, where virtually all the population is engaged in agriculture, subsistence farming is the norm, whereas in advanced societies almost all agricultural production is marketed. The industrialization process is based on inventiveness. Agriculture's capacity for innovation is certainly very great, but progress in agriculture depends to a large extent on the over-all progress of science and technology. In the less-developed countries, agriculture is the principal sector of the economy and average productivity is low. In advanced societies all sectors of the economy, including agriculture, reach very high levels of productivity.

It is quite clear that the varying socio-economic organization of agriculture is ultimately dependent on the over-all socio-economic system or the dominant mode of production. Feudal society was built up on the basis of a process whereby land was seized by violence, while capitalist expansion introduced semi-industrial agriculture into traditional societies and the assumption of power by socialist forces has given rise to collective and State-controlled forms of organization. The organization of agriculture cannot be accounted for by exclusively or mainly agricultural considerations; rather is it to be explained in terms of a given stage in the over-all process of socio-economic development.

This being so, rural economies, centred on agriculture, cannot really explain the latter's structures and transformations. The explanation has to be sought in the general economics, in a theory of integrated agricultural development.

*Education and development; the purpose of this volume.* Inasmuch as development is the major problem of our socio-political philosophy, teaching about development should be a major objective of our education system. This is not the case, however, for several reasons.

In the course of a large number of missions to many countries, we have often been struck by the fact that the people responsible for agricultural development at all levels had had only very summary training—and at times no training at all—in regard to the significance of development and the processes involved. Although, in our opinion, this situation is regrettable, it can be explained.

Development has only become a major problem in the socio-political philosophy of our time over the past twenty years and development has only recently been included as a subject in general and agricultural curricula, if indeed it is included at all.

It is true that many books on development have been published in recent years. But these books are written more often than not by specialists for an audience of specialists or else they present information on certain features of development: they do not make it possible to obtain a comprehensive and systematic grounding in development problems.

The people responsible for planning and sustaining the momentum of rural development have, in most cases, been trained in specialized establishments which provided instruction in rural economics and sometimes in general economics, but they have seldom been taught anything about agricultural development as an integrated part of over-all development. Hence they often have a too specifically 'agricultural' view of agriculture and its economic function.

Furthermore, the theory of integrated agricultural development is still by no means complete. There are few books dealing with the relationship between agriculture and the rest of the economy in the development process and there may not be any at all that are designed to provide basic information in this area.

The present book is the outcome of, on the one hand, awareness of this state of affairs and, on the other, Unesco's desire to contribute to promoting education in regard to rural development. The original idea was to produce a 'reference manual', the operative word being 'reference', as it was intended to enable all users to draw up manuals that would be tailored to the specific conditions encountered in their respective countries. But a manual implies a corpus of knowledge to be passed on, at once concise and exact. In the present state of the studies available and of the progress made in analysis, such an undertaking seemed too ambitious and premature at this stage. This book has accordingly been written as a trial exercise, in the hope that it will arouse sufficient interest, criticisms and suggestions to warrant the publication of a reference manual proper at some later date.

The author is an agronomist and economist with a keen interest in sociology, who has enjoyed the benefit of invaluable assistance from a number of his colleagues, although he alone bears responsibility for the text as it stands. Development is a complex process in the analysis of which technology, economics, sociology and political science, among other subjects, are all brought into play. A book on the subject ought therefore to be written by different specialists in the social sciences, working in co-ordination. However, it is not an easy task to set up and manage such interdisciplinary teams. The sometimes arbitrary division of the social sciences, and the fact that they are taught in different faculties and institutes are hardly conductive to an over-all and coherent approach to development processes. It is our fervent hope that significant progress may be made in the interdisciplinary approach and that a work such as this may be written in the near future by a team of specialists.

This work is intended, in the first instance, for those people who, in one way or another, are faced with the responsibility of planning and promoting rural development. For the next twenty or thirty years, development will be in the hands of men who have now completed their formal education and who, in the developing nations, have very often had insufficient basic training.

Adult education, at every level, is a fundamental objective in all the developing countries. This book can be used as a reference document for rural education groups. But it is also written with teachers in mind and endeavours to provide them with some of the materials they will need to evolve a form of teaching more in line with the fundamental social aims of development. From this standpoint, it attempts to formulate a new approach to the teaching of rural economics and to integrate it into the over-all analysis of social and economic development.

The fundamental principle of teaching is to combine the imparting of knowledge with practical training, to create a link between theoretical analysis and analysis of the facts, to avoid over-abstract presentation and to introduce basic concepts as they are needed. Our constant concern has been to ensure that we will be understood by as many people as possible and this consideration has prompted us to give definitions which may seem superfluous to some but which may, fortunately, prove useful to others. In addition, the book offers practice in rapid calculation, based on growth rates, with a view to giving tangible form to certain situations or propositions and making it easier to grasp their impact. Each chapter is followed by very simple tests and exercises relating to the basic concepts, which can be considered as a means of checking whether the concepts have been assimilated. A schedule of topics for group discussion is also given at the end of each chapter.

The purpose of this book is not to present a new development doctrine with a claim to universal applicability but merely, on a much more modest level, to juxtapose facts and ideas and to define how the problem should be tackled. The sheer diversity of the situations encountered shows that any attempt to build up a general theory of development would be vain because development is always part of a more or less specific historical process and context. The idea that the historical context is of fundamental importance underlies all our analyses and also explains the significance of the term 'reference document', in that the purpose is to put forward a set of problems for discussion which can be adapted according to need and to give facts that can be selected to meet the requirements of each and everybody.

The book is divided into two parts. Part I deals with the relationship between agriculture and underdevelopment and Part II with the relationship between agriculture and development. We have felt it advisable to preface the analysis of these relationships with an introductory chapter on inequalities in development. In fact, the true significance of underdevelopment and the real scope of the economic function of agriculture can only be properly assessed in relation to the existing inequalities in development.

## Acknowledgements

I should like to express my special gratitude to my colleagues Jean Pautard and Michel Bourdon who assisted in preparing the bibliography and the basic documents, Mahmoud Allaya who reviewed the mathematical notations and exercises, and Martine Heano who read over the text. My thanks are also extended to the students of the universities, colleges and institutes where I have lectured on development and whose comments and questions have made a major contribution to the form and substance of what I have to say on the subject. Lastly, I should like to thank my colleagues in the technical and administrative departments for all the varied assistance they have given me.

L.M.

# Introduction
## *The facts of the situation: inequalities in development*

Note. *Readers who are familiar with the concepts of national accounting, time series, growth rates, etc., and are sufficiently conversant with the general problems raised by inequalities in development, may ignore this introduction and turn at once to Part I. However, those in doubt may wish to check on their knowledge by means of the test and exercises on pages 41 and 42.*

1 **International disparities.** The purpose of this introduction is to assess some of the fundamental disparities occurring in the fields of growth, development and progress. An assessment of this type entails selecting a number of representative aggregates and criteria. These aggregates should preferably be derived from national accounts, which offer the very significant advantage of making it possible to represent the economy as a coherent whole. But accounting of this kind requires quite sophisticated statistical machinery and a large number of LDCs are not in a position to assemble the data needed. Furthermore, national accounts express economic flow patterns in monetary terms and the significance of monetary values in the LDCs is limited by the fact that a fairly large non-monetary sector still exists in the form of subsistence agriculture.

Growth, development and progress are all concepts which become meaningful only when used in comparisons. If, for example, *per capita* GDP is taken as a yardstick of the level of development, the situation of a given country only takes on its full meaning in relation to a 'development scale' ranging, say, from the lowest average *per capita* GDP to the highest. Countries become conscious of their situation by comparing themselves with others. In addition, a country which has the highest GDP at a given time may be able to move still higher up the scale if it has spare capacity for development. In this sense, the most developed countries can be said to be potentially underdeveloped or, in other words, growth can be said to be a historically incomplete process. It is quite obvious too that growth rates differ from country to country and that these differences can alter the relative position of countries on the development ladder. Hence a reduction in international disparities could only come about if the growth rates of the LDCs were higher than those of the DCs. Unfortunately this condition was not fulfilled during the United Nations First Development Decade (1960–70).

2 **Data sources.** Most of the international statistics available are compiled and published by international organizations, in particular by the United Nations. A list of the main statistical yearbooks is given in Appendix 1.[1]

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[1] The most general yearbook is the *Statistical Yearbook* published by the Statistical Office of the United Nations Department of Economic and Social Affairs, New York. The latest *Yearbook* available at the time of writing was that for 1969.

The international organizations have made considerable efforts to standardize statistical presentation and concepts, and significant results have been achieved in standardizing national accounts. However, there are two main systems in current use: the system of material product accounting used by the socialist countries and the United Nations standardized system, which is used by the Western nations, Japan and most of the LDCs. For various reasons to do with the socio-political philosophies of the countries concerned (definition of concepts) the uneven development of data-collecting systems, differences in the choice of base periods, etc., national statistics, despite all the efforts made, are not strictly comparable and this must be borne in mind when undertaking international comparisons.

Basic statistics and data are also obtainable from the annual reports of the different agencies of the United Nations. The Department of Economic and Social Affairs in the United Nations Secretariat publishes annual surveys and analyses of the state of the world economy and current trends. Its publication, *World Economic Survey, 1969–1970: the Developing Countries in the 1960s: the Problem of Appraising Progress*, provided us with much of the material for this introductory chapter.

The Food and Agriculture Organization of the United Nations (FAO) publishes an annual report on 'the state of food and agriculture' throughout the world and this publication is an essential document for studying the relationship between agriculture and development.

The statistics presented in Appendix 2 are taken from the United Nations *Statistical Yearbook* for 1969 and from the *World Economic Survey, 1969–1970*. In order to avoid making an arbitrary choice and in an endeavour to express meaningful trends from the standpoint of the world economy, we have taken the LDCs with the largest populations. In the case of America and Asia, these are the countries with 20 million or more inhabitants in 1970, while in Africa the countries chosen are those with more than 15 million inhabitants, since Africa has relatively fewer large countries than the other continents. These countries represent about half the population of the three main areas of underdevelopment in the world, namely Latin America, Africa and Asia. A brief glance at Table 1A in Appendix 2 stresses the diversity of the LDCs in terms of size (and yet we have only selected large countries), population density and national income *per capita*. *Per capita* income is consistently below the world average, which amounted to some $600 per head in 1965. Argentina alone, in fact, exceeds that average, by contrast with Burma, Nigeria and Zaire which have a *per capita* income only one-tenth of the average figure.

In Tables 2A et seq. (see Appendix 2), the following DCs have been added to the LDCs in order to make comparisons possible: the United States of America and Sweden (advanced industrial countries), the United Kingdom and France (industrial countries), Japan (a rapid-growth country) and Spain and Greece (semi-industrial countries).

Wherever possible, the tables include the two categories of DCs: developed countries with a market economy—DC(M)s—and developed countries with a planned economy—DC(P)s.

All these basic data will be used to shed light on the disparities in development and growth. As mentioned in the preamble, development accompanies growth but necessarily entails structural change. This aspect is the real subject of this book, but it will not be dealt with in this introductory chapter, which merely draws attention to a number of values and criteria used for measuring and estimating over-all international disparities, examining in turn inequalities in production, inequalities in income (and consumption) and inequalities in growth.

## Inequalities in production

3 **Material production and total product.** Production consists in providing man with material goods for consumption (food, clothing, housing, etc.) or for further production (energy, steel, machinery, etc.).

The material production of homogeneous goods can be measured in physical quantities (bushels of cereals, kilometres of roads or gallons of milk), but a common measure is needed to give the aggregate for heterogeneous goods such as, in this instance, cereals plus roads plus milk. The common measure used for this purpose is the monetary unit and production is expressed in terms of its value, which is equal to the quantity of the different goods multiplied by their respective prices.

It is not easy to estimate the value of production, nor is it possible to do so without raising the problem of international comparison. Prices, which constitute the basis for such estimates, depend on whether market conditions are free or prices are supported; they may also be bound up with planning objectives such as fixed price targets or be interrelated in such a way as to reflect economic desiderata at a particular stage in the development process.

In less-developed economies, a large proportion of production is totally unaffected by markets or development plans. A good example is agriculture, given the extent to which farmers themselves replenish their own stocks (by setting aside seed from the previous harvest), provide their own equipment (by constructing their own farm buildings or digging their own irrigation ditches) and support themselves (by keeping part of their crop for home consumption).

In addition, in the less-developed economies, there is a substantial 'pre-monetary' sector and any attempt to estimate the production of this sector on the basis of the prices obtaining in the monetary sector may result in arbitrary affirmations, especially as the selection of reference prices in the LDCs is a particularly tricky exercise. Prices are often unstable, and they may vary from place to place and fluctuate with time. And yet if no attempt is made to estimate the production of the 'pre-monetary' sector, a significant part of total production, notably that of all subsistence agriculture, will be left outside the national product. This will result in a much less accurate approximation than that obtained from the estimation methods commonly used.

In satisfying his needs, man uses not only material goods but also the services rendered by other men such as barbers, doctors, teachers, agricultural advisers and so on. Services can be likened to intangible goods.

Consequently, there are two concepts of production: the narrower concept relates only to material production and the broader concept includes the production of both material and intangible goods.

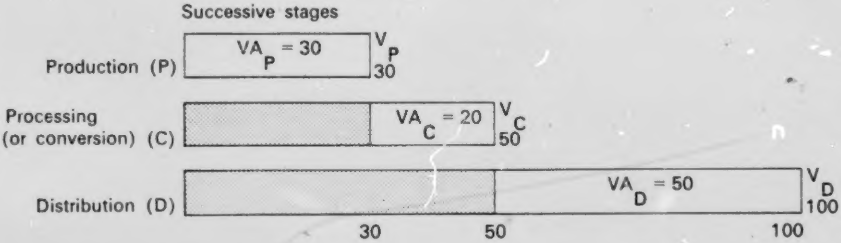
For reasons bound up with their social and political philosophy, the socialist countries tend to adopt the narrower concept of production. According to this view, the social product is the total value of material goods produced during the year in the sectors engaged in material production, such as agriculture, the mining and quarrying industries, manufacturing industries, construction, etc. No account is taken of activities such as public administration, national defence, personal and professional services, etc., which do not contribute directly to material production [1, p. 556].

In the other countries, the wider concept is normally used, and both goods and all services are included in the reckoning.

In the LDCs, inclusion of all services in the national product may result in serious distortions. In these countries, the tertiary sector is often 'inflated', but this trend corresponds more to a distribution of employment and income than to production proper. In such cases, the increase in the number of jobs in domestic service, and especially in the number of posts in government administration, really amounts to a 'mopping-up' of underemployment. In these circumstances, it becomes essential to record the progress of material production, which provides the foundation for structural transformation of the economy and for development of the services whose existence is justified by the over-all growth.

**4 The value added concept.** National production is the outcome of the interplay of a large number of elementary units, all of which make a contribution to some degree. In a production process, each unit playing a part in the process 'adds' a measure of value. In order to give an illustration of the value added concept, let us take the example of the fruit used for jam-making. The fruit is produced in production unit P and is processed (or converted) into jam in unit C, while the finished product is then distributed to consumers by unit D. Figure 1 represents this process, showing the value V of the products at the different stages P, C and D and the value added VA during the transition from one stage to the next.

FIG. 1. Total production and value added.



Production can be calculated in two ways:

1. The total value TV, which is equal to the sum of the value of the product at the different stages of production:

$$TV = V_P + V_C + V_D$$
$$30 + 50 + 100 = 180.$$

2. The total value added TVA, which is equal to the sum of the values added by each of the production stages:

$$TVA = VA_P + VA_C + VA_D$$
$$30 + 20 + 50 = 100.$$

With the first method, it is obvious that we have added in the value of the fruit three times, which is twice too many, and the cost of processing the fruit into jam twice, which is once too many. It stands to reason that the same product ought not to be included more than one in over-all production calculations. Hence production is defined as the sum of the values added during the production processes.

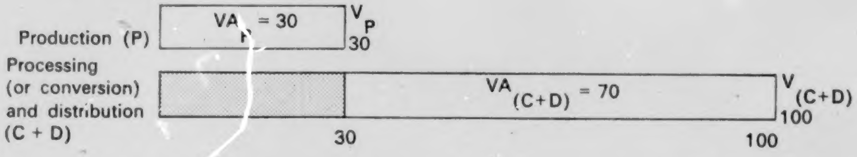
The production of unit C can be broken down into two basic components: the purchases which C makes from P and the value added by C. Purchases which C makes from P are called 'intermediate consumption' (ICo) or inputs.

$$\begin{aligned} V_C &= ICo + VA_C \\ 50 &= 30 + 20. \end{aligned}$$

A basic property of value added is that it is independent of production structures while total value is not.

Let us suppose that C and D merge; the process can now be represented in a simplified form as follows:

FIG. 2. Merger of C and D.



$$\begin{aligned} TV &= V_P + V_{(C+D)} = 130 \\ TVA &= VA_P + VA_{(C+D)} = 30 + 70 = 100. \end{aligned}$$

The sum of the values added stands at 100 and remains unchanged from Figure 1 to Figure 2, while the total value drops from 180 to 130.

This property of value added is fundamental and is used to measure the production of an enterprise, a sector, a territory or a nation.

**5 The domestic product.** This is equal to the sum of the values added by all the production units carrying out their business on the national territory, irrespective of whether the owners of the units are nationals or expatriates. The domestic product is a territorial concept relating to activity within the national frontiers.

The domestic product can be estimated on the basis of current market prices (m) or after these prices have been corrected to take account of the subsidies (Su) which producers may enjoy or of indirect taxation (IT) which may be levied on them. Current market prices are adjusted by deducting the taxes (which increase the prices) and by adding the subsidies (which lower the prices). The domestic product so adjusted is known as the domestic product at factor cost ($DP_c$):

$$DP_c = DP_m + Su - IT.$$

As indirect taxation is higher than subsidies, $DP_c$ is lower than $DP_m$. In most countries, indirect taxation amounted to about 10 per cent of production in the 1960s.

The product can be expressed in gross (G) or net (N) terms. The net product is equal to the gross product less the capital goods needed for the replacement or depreciation (amortization) of worn and obsolete goods (A):

$$NDP_c = GDP_c - A.$$

The provision made for depreciation varies from country to country but it worked out, in the sixties, at about 8 per cent of $GDP_c$.

The net domestic product includes all production that can be consumed (consumer goods = Co) or that can contribute to increasing the nation's productive capacity (capital goods) or that can be exported (Ex). The increase in productive capacity corresponds to net capital formation (NCF):

$$NDP_c = Co + NCF + Ex.$$

Services are not taken into account in calculating the material product. The net material product is equal to the social product or total production less intermediate consumption. It is intended for final consumption, capital accumulation and export.

6 **The national product.** This refers to the production achieved by production factors (labour, capital and enterprises) which are supplied by nationals of the country, irrespective of the country where the production factors are located.

In accounting practice, the national product is equal to the product plus the revenue accruing from nationals working outside the country and from foreign investments (rent, interest, profits), minus similar revenue paid to expatriates.

The difference between the revenue received and paid out is called the net revenue from abroad (NRA). If the revenue received exceeds the revenue paid out, the national product is greater than the domestic product while, in the opposite case, the domestic product is the greater. In most of the developing countries, provided the same bases are used for estimation purposes, the national product is lower than the domestic product because of the proportion of production factors owned by expatriates. However, the share of net revenue from abroad, expressed as a percentage of GDP, is relatively small. In 1967, it exceeded 4 per cent of GDP in only a few countries, where expatriate firms were operating particularly large mines or plantations (Iran and Venezuela 8 per cent; Libyan Arab Republic 16 per cent; Kuwait 24 per cent; Saudi Arabia 25 per cent; Liberia 28 per cent). In some cases, where there are established patterns of labour migration out of the country (Upper Volta, Lebanon, Morocco, Republic of Korea, etc.), the national product is higher than the domestic product [2, p. 14].

Like the domestic product, both the gross and the net national products can be calculated at current market prices or at factor cost.

While the GDP is particularly meaningful for estimating the production of a given area, irrespective of whom the production factors belong to, the national product is more significant from the standpoint of income formation. The net national product at factor cost ($NNP_c$) is, in fact, equal to the national income. This is the counterpart to the value of production, which is broken down into net revenue from abroad and domestic revenue.

7 **The average *per capita* product.** The average product per head of the population is obtained by dividing the domestic or national product, whether gross or net, and whether estimated at current market prices or at factor cost, by the population of the country, preferably estimated in the middle of the year.

The concept of an average *per capita* product is meaningful only to the extent that the average itself is meaningful. However, as we shall show, in all countries of the world and especially in the underdeveloped countries, the goods available are distributed very unevenly among the inhabitants.

In order to make international comparisons possible, it is also necessary to express the product in terms of a common currency. The average *per capita* product is usually expressed in United States dollars and exchange rates are used to convert the products expressed in the national currency. These rates express the amount of foreign exchange which can be obtained for one unit of the national currency. The exchange rate depends, however, on several factors—it may be free, floating, controlled or fixed— and conversion into a common currency introduces further distortions which are liable to skew the relative values of *per capita* monetary product. The United Nations calculates 'adjusted' exchange rates in order to improve the quality of comparisons.

The gross *per capita* domestic product is sometimes presented as a composite index of development. Yet, taken by itself, this indicator is not sufficient. It is influenced by products, such as weapons, which do not contribute anything to development in general, and by transferred products which make no contribution to national development.This is the case for countries exporting subsoil resources in general and petroleum in particular. The example of Kuwait is particularly striking. In 1967, the *per capita* gross domestic product was of the same order of magnitude as that of the United States, although living standards and the structure of the economy, as well as the domestic distribution of goods, were quite different. The GDP must therefore be supplemented by other indicators to give a truer picture of the level of development. However, a knowledge of relative *per capita* products is very useful for obtaining a graphic picture of inequalities in development, as well as furnishing background material for new theories on development and prompting improvements in statistical methods and accounting techniques.

**8 Inequalities in production—the global picture.** Since the different indicators which can be used ($GDP_m$, $GDP_c$, $GNP_m$, $GNP_c$, NR) give scatter patterns of the same order in respect of the averages for regions, and since the *per capita* gross domestic product at market prices is available for a large number of countries and is a reliable measurement for production, we have chosen it as our indicator.

Table 1 (averages for the different regions) and the first column of Table 2A in Appendix 2 (averages by countries) clearly illustrate the international disparities that exist.

The LDCs have an average *per capita* GDP more than ten times lower than that of the DC(M)s and more than five times lower than that of the DC(P)s.

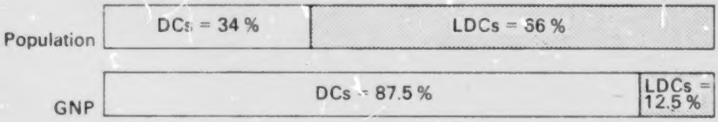
The disparities are even more pronounced if a comparison is made by countries rather than by regions. For all the countries selected (first column of Table 2A in Appendix 2), the *per capita* product ranges from about $4.000 in the United

TABLE 1. *Per capita* $GDP_m$, in United States dollars (1967)

| | | | |
|---|---|---|---|
| Africa | 135 | LDCs | 180 |
| Latin America | 466 | DC(M)s | 2,232 |
| Asia | 129 | DC(P)s | 1,183 |

States, to about $60, in Ethiopia, i.e. is sixty to seventy times higher in the United States than in Ethiopia. The largest LDCs, such as India, Indonesia and Pakistan, have a *per capita* product varying between $80 and $130, i.e. thirty-five to forty times less than the United States and ten to fifteen times less than the Union of Soviet Socialist Republics. These disparities, and the fact that they are particularly marked in the largest LDCs, explain the diagram, which we reproduce in Figure 3, taken from the Pearson Report (p. 24).

FIG. 3. World distribution of population and gross national product.



**9 Disparities within the LDCs.** As the level of development is a relative concept which can be illustrated by the rungs of a ladder, the distinction between development and underdevelopment is to some extent a conventional one. If, by convention, the term 'less-developed' is applied to countries which have a *per capita* product lower than the world average, the fact nevertheless remains that there are marked disparities among such countries. Table [illegible] shows that the average *per capita* product in Africa and Asia is lower than the general average for the LDCs but that the average for Latin America is two to three times higher. Argentina has the highest *per capita* product; it is five to eight times higher than the average for the largest of the large LDCs and, in addition, it comes very close to that of Greece and Spain, the two semi-industrial countries of the Mediterranean basin (see Table 2A in Appendix 2).

These comparisons highlight the uncertainty prevailing with regard to the frontiers of development and the wide variance between countries labelled as 'less-developed'. This diversity is a basic fact of life which should alert us to the danger of over-sweeping generalizations.

In addition to these disparities between countries, disparities exist within each country: *per capita* product varies considerably from one sector or region to another, and the *per capita* GDP is generally higher in industry than in agriculture, higher in the monetary sector than in the pre-monetary sector and higher in modern agriculture than in traditional farming. The wider the variance, the less meaningful the average. The fact is that the diversity of the underdeveloped world and the internal disparities of the LDCs are fundamental aspects of underdevelopment.

## Inequalities in income: disparities in living standards

**10 Income and consumption.** The net national product at factor cost is equal to the national income. This income represents the volume of resources a country has available for consumption and investment purposes.

Consumer expenditures are broken down into public expenditures and private expenditures. Private consumer spending, representing the purchases households make for the direct satisfaction of their needs, might be considered a good pointer to the standard of living. In actual fact, part of public expenditure makes a direct

TABLE 2. Average total *per capita* consumption, in United States dollars (1967)

| | | | |
|---|---|---|---|
| Africa | 114 | LDCs | 152 |
| Latin America | 360 | DC(M)s | 1,744 |
| Asia | 112 | DC(P)s | 749 |

*Source:* United Nations, *World Economic Survey, 1969–1970*, Table 10, p. 32, New York, N.Y., United Nations, 1971.

contribution to the welfare of the population: this is the case notably of the sums earmarked for education, public health, town planning, nature conservation and so on. All socio-economic systems provide these services free of charge or on advantageous terms, but the scale of such services varies with the systems and levels of development. In point of fact, it is often difficult to determine the proportion of public expenditure really contributing to direct improvements in the well-being of the population.

Table 2 and Table 2A (see Appendix 2) show the average over-all disparities in total consumption.

The LDCs as a whole 'consume' about ten times less than the DC(M)s and five times less than the DC(P)s. Within the group of LDCs, the countries of Latin America consume about three times more than the other countries. The disparities are much more marked if the national averages are taken instead of the averages for each group of countries.

Of all the countries selected (second column of Table 2A) in Appendix 2 the United States has the highest *per capita* consumption. It is some thirty to forty times higher than that of the largest of the large LDCs such as India, Indonesia or Pakistan.

Argentina has the highest *per capita* consumption of the LDCs: it comes close to that of Spain and Greece and is about 50 per cent lower than that of the U.S.S.R.

The same disparities from country to country among the LDCs as we have already noted in respect of production occur again in respect of consumption. Large or very large disparities also exist within the countries themselves, depending on the distribution of property and the way in which different income categories are determined. This subject will be analysed in Part I.

International comparison of *per capita* consumer spending can provide a first approximation for estimating international disparities. However, this indicator is not entirely satisfactory, since expenditure corresponds to the use made of income whereas real consumption also depends on price levels and on the varying degrees to which governments participate in social welfare.

To represent real consumption, we may use indicators which can be expressed in physical quantities, in coefficients of apparent satisfaction, in the volume of services provided for the population and so on. In the DCs, these indicators may relate, for example, to the number of dwellings built, the net consumption of electricity, the number of telephones, television receivers, cars, etc., per 1,000 inhabitants. Such indicators are certainly not entirely meaningless in the LDCs. However, if we consider that in these countries the 'fundamental objectives of the human economy',[1] i.e. the provision of food, housing, clothing, medical care, education, information and so on, are not fulfilled, then our attention must be directed more particularly to these objectives. In the following paragraphs, we shall confine ourselves to three essential objectives for which statistics are available: the provision of food, the provision of medical care and the provision of education and information.

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[1] F. Perroux, *La Coexistence Pacifique*, Paris, Presses Universitaires de France, 1958, 3 vols, 666 p.

**11 Nutrition (food).** Diet can be considered one of the principal factors in living standards: in the LDCs, virtually the whole of estimated income is accounted for by subsistence consumption or the purchase of foodstuffs. This index is also related to the population's health and capacity for work.

Evaluations of 'apparent consumption' are based on estimates of production, of international trade, of losses and of products used for animal feedingstuffs and for reseeding, Wherever possible, the results of these global estimates are compared with dietary surveys carried out among individual households and families.

Appropriate conversion factors are used to express the different products forming the diet intake, such as cereals, pulses and tubers, in terms of calories and proteins, these being two fundamental components entering into quantitative and qualitative assessments of dietary intakes. The extent to which diet requirements are met can be estimated by comparing apparent consumption with reference diets drawn up by nutritionists, allowance being made for the different factors acting on levels of food consumption such as climate, population structure, activities and so on.

Hence the best criterion for comparing diet levels is not the actual diet as expressed in terms of calorie or protein ratings, but rather the relationship between the food needed and the food available.

Global disparities in respect of calories and proteins are illustrated in Table 3, which was drawn up by FAO in preparing the IWP.

At the beginning of the First Development Decade, the DC(M)s (zone A), with the exception of Japan, and the DC(P)s of Eastern Europe had a calorie supply about 15 per cent in excess of requirements, whereas there was a shortfall of some 6 per cent for the LDCs as a whole. However, there are marked disparities within the underdeveloped world itself. South America, on the whole, has a surplus, while Africa south of the Sahara, the Near East and North Africa and Asia and the Far East have a deficit varying from 5 per cent to 10 per cent.

Surpluses and, even more, deficits, are not very meaningful when considered in terms of national averages. In fact, consumption surveys point to very unbalanced internal distribution patterns and these patterns become increasingly unbalanced as less food is available. Hence the average calorie supply should exceed the average requirement if the number of families facing food supply difficulties is to be reduced.[1]

Disparities in respect of protein levels, expressed as a percentage of requirements, are even more pronounced than calorie disparities, especially if account is taken of high-quality proteins, which are chiefly obtained from animals. 'The countries of Oceania (Australia and New Zealand) and North America (the United States and Canada), have a *per caput* intake of nearly twice the quantity of total proteins and nine times the quantity of animal proteins as Asian countries.'[2] In the DCs, about half the protein intake comes from animal products, as against a figure of about 20 per cent in the LDCs.

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1. FAO, *Provisional Indicative World Plan for Agricultural Development*, Vol. 2, p. 490, Rome, FAO, 1970.
2. FAO, op. cit., p. 491.

TABLE 3. Calorie and protein supplies and requirements by sub-regions in the base year (1962)

| Area | Calories (*per capita* per day) | | | Proteins (grammes *per capita* per day) | | | |
|---|---|---|---|---|---|---|---|
| | Supplies | Requirements | Supplies as percentage of requirements | Supplies | | Requirements (practical allowances) | Supplies as percentage of requirements |
| | | | | in total proteins | of animal proteins | | |
| *Zone A* | | | | | | | |
| North America | 3,090 | 2,710 | 114 | 91 | 64 | 74 | 123 |
| Western Europe | 2,950 | 2,660 | 111 | 87 | 42 | 74 | 116 |
| Japan | 2,250 | 2,390 | 94 | 70 | 17 | 65 | 108 |
| Oceania | 3,200 | 2,540 | 126 | 93 | 62 | 73 | 127 |
| South Africa | 2,830 | 2,420 | 117 | 81 | 32 | 65 | 124 |
| *Zone B* | | | | | | | |
| U.S.S.R. | 3,010 | (2,600) | 116 | 86 | 30 | ... | ... |
| Eastern Europe | 3,020 | (2,570) | 118 | 94 | 34 | ... | ... |
| China | 2,180 | | | 63 | 7 | ... | ... |
| *Zone C* (average) | 2,130 | 2,260 | 94 | 57 | 11 | 61 | 93 |
| *Zone C1* | | | | | | | |
| Latin America | 2,600 | 2,380 | 109 | 68 | 25 | 65 | 105 |
| Central America | 2,440 | 2,310 | 106 | 62 | 15 | 62 | 101 |
| South America | 2,650 | 2,400 | 111 | 70 | 28 | 66 | 106 |
| *Zone C2* | | | | | | | |
| Africa south of the Sahara | 2,130 | 2,240 | 95 | 58 | 9 | 63 | 91 |
| Central Africa | 2,010 | 2,220 | 91 | 41 | 9 | 60 | 68 |
| East Africa | 2,110 | 2,270 | 94 | 63 | 11 | 63 | 99 |
| West Africa | 2,170 | 2,230 | 97 | 60 | 7 | 64 | 93 |
| *Zone C3* | | | | | | | |
| Near East and North Africa | 2,140 | 2,340 | 91 | 64 | 13 | 64 | 100 |
| Near East | 2,155 | 2,330 | 92 | 65 | 14 | 62 | 105 |
| North Africa | 2,081 | 2,360 | 88 | 59 | 9 | 70 | 84 |
| *Zone C4* | | | | | | | |
| Asia and Far East | 1,990 | 2,210 | 90 | 51 | 7 | 58 | 88 |
| India | 1,980 | 2,200 | 90 | 52 | 5 | 60 | 86 |
| Pakistan | 1,940 | 2,280 | 85 | 47 | 9 | 53 | 89 |
| Other countries | 2,115 | 2,200 | 96 | 51 | 11 | 56 | 91 |

*Source:* FAO, *Provisional Indicative World Plan for Agricultural Development*, Vol. 2, p. 491, Rome, FAO, 1970.

*Note.* In this table, zone A comprises the developed countries with a market economy, zone B the countries with a planned economy and zone C the underdeveloped countries (FAO classification for preparation of the *IWP*).

The calorie supply varies from 2,000 in Asia and the Far East to 3,200 in Oceania, while requirements range from 2,200 to 2,700. The total protein supply varies from 41 grammes in Central Africa to 94 grammes in Eastern Europe, as opposed to requirements of the order of 53–74 grammes. The widest disparities are for animal proteins, where the figures vary from 5 grammes in India to 64 grammes in North America.

**12 Public health.** Health is a fundamental aspect of living standards and improved health is an essential development objective. Estimates of the state of health of a population may be based on exact criteria by testing stamina or resistance but, for practical purposes, with the data available at present, simpler indicators such as the mortality rate and life expectancy have to be used. The attention devoted to health can be gauged by the expansion of medical services. The existence in the vicinity of a doctor, nurse, hospital or dispensary can be considered an important factor in the standard of living.

TABLE 4. Statistical indicators of health

| | LDCs | Latin America | Africa | Asia | Rest of world |
|---|---|---|---|---|---|
| Crude mortality rate (per 1,000 inhabitants) | 17 | 11 | 21 | 17 | 9.4 |
| Infant mortality rate (per 1,000 live births) | 118 | 81 | 123 | 122 | 29 |
| Life expectancy at birth (in years) | 45 | 61 | 40 | 44 | 70 |
| Natural growth rate of population (%) | 2.3 | 2.9 | 2.4 | 2.2 | 0.9 |

*Source:* United Nations, *World Economic Survey, 1969–1970,* Table A6, New York, N.Y., United Nations, 1971.

The crude mortality rate, or the annual number of deaths divided by the total population, expressed per 1,000 inhabitants, is the indicator most commonly used. The significance of this rate depends on the structure of the population: as the average age of the population rises, the mortality rate increases.

The rate of infant mortality, in the year following birth, is considered a good pointer to the extent to which hygiene, health and nutrition have developed. A drop in the infant mortality rate from what is initially in most cases a high level will tend to lower crude mortality rates and increase the expectation of life, as well as the natural growth rate of the population.

Natural population growth is derived from the difference between birth and death rates. If the birth rate for a given year is 40 per 1,000 and the death rate is 10 per 1,000, the population growth rate for the year will be as follows:

$$\frac{40 - 10}{1,000} = 30 \text{ per } 1,000 = 3 \text{ per cent.}$$

Table 4 gives the average figures (in or around 1968) for the different regions and clearly illustrates the disparities in health standards throughout the world.

The crude mortality rates are about twice as high in the LDCs as in the rest of the world and infant mortality is four times as high, while the average length of life is about one-third lower. Disparities exist within the LDCs and the countries of Latin America are noteworthy for their relatively favourable situation.

Disparities in the development of medical services are no less marked. The World Health Organization (WHO) originally laid down an average target of 10,000 people to each doctor by the end of the First Development Decade. In fact, that target was not reached in 40 per cent of the developing countries, whereas nowhere in the developed countries are there more than 3,000 people to each doctor [2, p. 43].

**13 Education and information.** Several indicators can be considered under this heading, including the level of education of the total population, the number of children attending school, the priorities attached to education (expenditure on schools, teachers, etc.).

The proportion of literates (people who can read and write) or semi-literates (people who can read but not write) is a summary and unreliable indicator of the level of education, based as it usually is on statements made by the people concerned during surveys and seldom on control tests. In addition, many countries have language problems and literacy may be defined in terms of the use of a foreign language.

Instead of taking a census of the number of literates, another approach is to estimate the proportion of the population that has had no formal education. Literacy can, in fact, be acquired outside school (functional literacy) and the ability to read and write may be lost over the years through lack of practice.

Since formal education does not confer literacy once and for all, it only assumes its full significance in relation to job requirements, the creation of libraries, the dissemination of newspapers and periodicals and the existence of organized information media.

The daily circulation figures for newspapers per 1,000 inhabitants or other indicators relating to the dissemination of the written word can be a useful guide to assessing a population's reading habits.

In or around 1968, half the DCs had literacy rates of more than 90 per cent, while nearly half the LDCs had rates of below 30 per cent. At the beginning of the 1960s, the proportion of countries where over half the adult population had not had any formal education amounted to less than 25 per cent for the DCs and more than 80 per cent for the LDCs [2, p. 61].

A comparison of the selected LDCs (Table 3A in Appendix 2) shows that the literacy rates, the proportion of the population that had attended school and the proportion that had completed a secondary-school course are particularly low in the largest of the large LDCs like India, Iran and Pakistan. The present percentage of pupils enrolled and the expenditure on education as a percentage of the GDP demonstrate the considerable or even very considerable effort countries are currently making in favour of education. However, the percentage of pupils enrolled in primary education, compared with the corresponding age group, is still low in the large LDCs, where the school-going population varies from 20 per cent to 50 per cent.

Besides the disparities existing from country to country, there are significant imbalances within each country: a large number of surveys have highlighted the part played by social origin, geographical location—the countryside is underprivileged—income and many other factors.

## Inequalities in growth

**14 Time series.** Economic growth is the incrementation in time of major economic aggregates such as production, income, consumption, indicators of living standards and so on. The study of growth is based on the plotting and observation of time series. These series cover periods of varying length such as the period since the Second World War, the First Development Decade (1960–70), etc. In most of the developed countries, work has been done in recent years on the establishment of series starting from the beginning of the industrial revolution in Europe in the eighteenth and nineteenth centuries and running to the present day. In this way, the foundation is gradually being laid for a quantitative history based on an analysis of growth and of the historical process of social transformation. The period we shall consider here is appreciably shorter and will be mainly limited to the First Development Decade.

A series can be expressed either in physical quantities (when the product involved is relatively homogeneous in time and space, such as tons of wheat, gallons of milk and so on) or in monetary terms (as is necessary when an aggregate has to be obtained for heterogeneous products such as milk and wheat taken together).

A series in terms of value can be drawn up on the basis of constant prices or of current prices. In a series at constant prices, the products for each of years 1, 2, 3 ... *n* are multiplied by the prices for the year chosen as the base year, e.g. year 0. In this case, the prices for the base year are used only to make it possible to add heterogeneous products together and to weight their relative importance. The monetary value of production for year *n* is calculated as follows:

$$v_n = \sum_i p_{io} q_{in} \quad i = 1.2 \cdots m \text{ (products)}$$

i.e. $v_n = q_{1n} p_{10} + q_{2n} p_{20} + q_{3n} p_{30} + \dots + q_{mn} p_{m0}$, where $q_{1n}\, p_{10}$ signifies the amount of product 1 in year *n*, multiplied by the unit price for that product in year 0.

These series, which do not express either exclusively physical quantities or the value proper of production, are known as 'volume' series.

In series at current prices, each quantity for year *n* is multiplied by its price in the same year *n*:

$$v_n = \sum_i p_{in} q_{in} \quad i = 1.2 \dots m.$$

Series expressed in physical quantities, in volume (at constant prices) or in value (at current prices) can be published in the form of index numbers.

The indexing of a series entails converting absolute values into relative values referring to a base period. The main advantage of this method is that it enables relative variations to be read off directly.

Example: $GDP_m$ for country C (base 100 in 1950):

| | 1950 | 1951 | 1952 |
|---|---|---|---|
| GDP | 500 | 520 | 550 |
| Index | 100 | 104[1] | 110 |
| Relative variation (in relation to base period) (%) | | 4 | 10 |

[1] $\frac{520}{500} \times 100 = 104$.

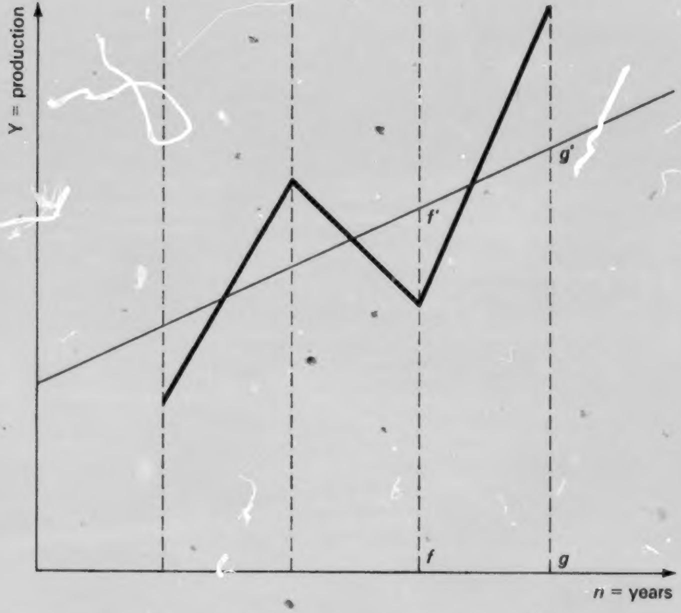
In actual fact, the plotting of indexes is a highly complex exercise: some aspects of the methods used will be touched on in connexion with the FAO index numbers for agricultural and food production.

One index which is frequently used for working out the series published by the international organization is the Laspeyres Index, which is expressed as follows:

$$I_{n/0} = \frac{\sum_i p_{io} q_{in}}{\sum_i p_{io} q_{io}} = \frac{\text{Value of production in year n at prices for year 0}}{\text{Value of production in year 0 at prices for year 0}}.$$

**15 Analysis of time series: annual fluctuations and long-term trends.** If the annual production of rice, wheat, etc. or the total production expressed in monetary terms at current or constant prices or as indices are plotted on a graph, it will be seen that there are considerable fluctuations from year to year (Fig. 4).

FIG. 4. Time series.



The more important the role played by natural factors in the production process, the more marked these fluctuations will be, as in the case of the LDCs. It is not unusual to find annual fluctuations in food production ranging from −10 to +10 compared with the average, or even from −20 to +20. Agricultural fluctuations affect the annual fluctuations of the domestic or national product, to a degree that depends on the proportion of that product which agriculture accounts for. But the other sectors of the economy are also subject to fluctuations, which may be more or less regular in character (economic cycles) or may be purely random phenomena (natural disasters, wars, strikes, revolutions, etc.).

When dealing with economic growth, as we have already stressed, we are interested in the long-term view and hence in trends rather than in annual fluctuations. However, we should not disregard fluctuations, especially as a braking factor on growth.

The methods used for determining a trend may be graphical, arithmetical or analytical. An adequate approximation can be obtained from a 'sight plot' if the fluctuations are quite small or follow a regular pattern, whereas mathematical adjustment methods must be used if the exact trend has to be determined.

**16 Average growth rate.** This expresses in percentage terms the average annual variation of a series over a given period. The growth rate (expressing the long run) should always be calculated on the basis of the trend. For example, the diagram shows that calculation of the growth for year *g* on the basis of year *f* actually reveals the scale of the fluctuations but not growth proper, which should be calculated on *f′*, *g′*.

In many cases, however, the trend is not computed and the effects of annual fluctuations are attenuated merely by comparing the average of the two or three 'terminal' years with that for the two or three years of the base period. In agriculture, where annual fluctuations are appreciable, this method represents the minimum precaution that has to be taken. FAO indices, for instance, are usually calculated over a five-year base period.

The growth rate is commonly used to express the variations in a time series. The rates given in statistical yearbooks are in most cases compound rates, a term which has been coined by analogy with 'compound interest'.

The type of question asked by financiers, population experts or economists is: What happens to a quantity $q$ growing at a rate of $r$ per cent a year at the end of $n$ years?

Let us write the successive values for years 0, 1, 2, 3, ... $n$.

Years

$$
\begin{array}{ll}
0 & \rightarrow q_0 \\
1 & \rightarrow q_1 = q_0 + q_0 r = q_0(1 + r) \\
2 & \rightarrow q_2 = q_1(1 + r) = q_0(1 + r)(1 + r) = q_0(1 + r)^2 \\
\text{''} & \quad \text{''} \\
\text{''} & \quad \text{''} \\
n & \rightarrow q_n = q_0(1 + r)^n
\end{array}
$$

This expression can also be written:

$$\log q_n = \log q_0 + n \log (1 + r).$$

It can be used to solve several problems involving growth, including calculation of the compound (or geometrical) growth rate during the period ($O_n$).

If $P_n$ represents the production for the year $n$ (or preferably the average for the three terminal years) and $P_0$ the production for year 0 (or preferably the average for the three years forming the base period), it is easy to determine the growth rate which can, in fact, be read off directly from compound interest tables.

The higher the growth rate, the faster production increases. In order to double production at the compound rate of 1, 2, 3, 4 or 5 per cent the time needed would be seventy, thirty-five, twenty-four, eighteen and fourteen years respectively. Hence a country whose growth rate is 5 per cent doubles its production in fourteen years!

**17 Total and *per capita* growth.** The over-all growth of an economic unit can only bring about *per capita* growth if economic growth is greater than population growth. The *per capita* growth rate is a differential rate and is equal to the difference between the economic growth rate and the population growth rate. This fundamental concept must be demonstrated and to do so we shall use a simple illustration to make it more readily understandable.

Let it be assumed that the available production per inhabitant ($y_0$) during the base period is equal to the production $Y_0$ divided by the population $P_0$:

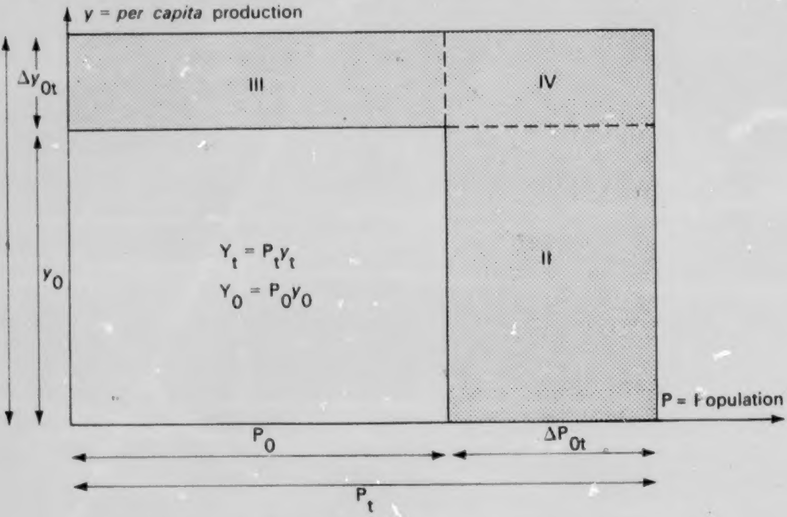
$$y_0 = \frac{Y_0}{P_0} \quad \text{or} \quad Y_0 = P_0 y_0.$$

Figure 5 shows that at time (0), the area of production $Y_0$ is equal to the population ($P_0$) multiplied by the production available per inhabitant ($y_0$). If, from time

(0) to time ($t$), production increases from $Y_0$ to $Y_t$, the new area is equal to:

$$\begin{aligned} Y_t &= (P_0 + \Delta P_{0t})(y_0 + \Delta y_{0t}) \\ &= P_t y_t. \end{aligned}$$

FIG. 5. Variation of population and *per capita* production.



It will be noted that the difference between $Y_t$ and $Y_0 = \Delta Y_{0t}$ is equal to the sum of areas II + III + IV, i.e.:

$$\begin{aligned} Y_t - Y_0 &= \quad \text{II} \quad + \quad \text{III} \quad + \quad \text{IV} \\ Y_t - Y_0 &= (\Delta P_{0t} \times y_0) + (\Delta y_{0t} \times P_0) + (\Delta y_{0t} \times \Delta P_{0t}). \end{aligned}$$

If we divide by $Y_0 = y_0 P_0$, we obtain:

$$\frac{\Delta Y_{0t}}{Y_0} = \frac{\Delta P_{0t} y_0}{y_0 P_0} + \frac{\Delta y_{0t} P_0}{y_0 P_0} + \frac{\Delta y_{0t} \Delta P_{0t}}{Y_0 P_0}. \tag{1}$$

If $\Delta y \times \Delta p$ is relatively small, the last term of the equation can be disregarded. After cancelling out, equation (1) becomes:

$$\frac{\Delta Y_{0t}}{Y_0} = \frac{\Delta P_{0t}}{P_0} + \frac{\Delta y_{0t}}{y_0}. \tag{2}$$

Each of the terms of this expression represents a growth rate (if we express it in percentage terms) and equation (2) can be written in the following form:

$$r_Y = r_p + r_y.$$

Hence $r_y = r_Y - r_p$, where $r_Y$ is the growth in national production, $r_p$ is the population growth and $r_y$ is the *per capita* growth in available resources.

In other words, *per capita* growth is equal to total economic growth less population growth. However, this proposition is only acceptable provided the variations are quite slight and enable the last term of equation (1) to be disregarded. This fundamental concept should be kept constantly in mind, as it will form the basis for many of the estimates made throughout this volume.

**18 Growth indicators.** The time series to be considered relate to major aggregates such as product, income, consumption and the degree to which the fundamental needs of the human economy are met.

The growth of material production measures the increase in consumer and capital goods. Measurement of this growth is of interest, in so far as any increase in material production is directly linked to transformation of the economic infrastructure.

Growth of GDP depends on the growth of material production and of services. If the growth of GDP is greater than that of material production, this may reflect the effort a country has made to develop its tourist potential or trade, but it may also arise from the fact that job opportunities in the material production sector are being created at too slow a pace and that people looking for work are obliged to fall back on government service or personal and domestic services.

Taking the definitions already given for national accounting aggregates, the growth of GDP at current market prices is affected by changes in the level of taxation and subsidies, that of GNP by changes in net revenue from abroad and that of NNP (net national product) and hence NR (net revenue) by allowance for depreciation.

In the 1960s, the results given by the different production indicators do not differ in any fundamental way if the regional averages alone are considered. On the whole, during the sixties, tax and depreciation levels remained relatively stable (in the neighbourhood of, respectively, 10 per cent and 8 per cent of $GDP_c$) while net revenue from abroad accounted over-all for only a small part of GNP, except in a few countries [2, p. 12]. The trends in different countries can be affected by the pattern of fiscal policy, subsidies, investment, foreign relations and so on.

The growth of total consumption relates to both public and private consumption. The trend of real consumption can be seen from examining the development of the welfare indicators.

Growth indicators can be global, relating to the economy as a whole, or per head of the population. Global indicators characterize economic growth proper, while *per capita* indicators express a differential growth pattern derived from economic and population growth.

**19 The unequal growth of production: the Pearson Report.** The broadest representation of total and *per capita* production over the last two decades is that to be found in the Pearson Report [3, p. 358]. The relevant information is reproduced here as Table 5 and relates to eighty developing countries covering approximately 97 per cent of the GDP of the entire developing world.

According to this table, during the period 1950–67, the over-all GDP growth rate at constant prices (in volume) of the LDCs was about 4.8 per cent, per annum, exceeding that of the industrial countries, which amounted to 4.3 per cent per annum. Different patterns can, however, be noted within the LDCs themselves. South Asia and Africa, for example, advanced at a slower pace than did the other LDCs and at rates lower than those of the industrial countries.

TABLE 5. Regional growth of gross domestic product in constant prices, population and gross domestic product *per capita* (1950–67) (per cent per year)

| | 1950–60 | 1960–67 | 1950–67 |
|---|---|---|---|
| *Developing countries* | | | |
| GDP | 4.6 | 5.0 | 4.8 |
| Population | 2.2 | 2.5 | 2.3 |
| GDP *per capita* | 2.3 | 2.5 | 2.4 |
| *Africa* | | | |
| GDP | 4.0 | 4.0 | 4.0 |
| Population | 2.3 | 2.4 | 2.3 |
| GDP *per capita* | 1.7 | 1.6 | 1.7 |
| *South Asia* | | | |
| GDP | 3.6 | 4.1 | 3.8 |
| Population | 1.9 | 2.4 | 2.1 |
| GDP *per capita* | 1.7 | 1.7 | 1.7 |
| *East Asia* | | | |
| GDP | 4.7 | 5.6 | 5.1 |
| Population | 2.5 | 2.7 | 2.6 |
| GDP *per capita* | 2.1 | 2.8 | 2.4 |
| *Southern Europe* | | | |
| GDP | 5.2 | 7.1 | 6.0 |
| Population | 1.4 | 1.4 | 1.4 |
| GDP *per capita* | 3.7 | 5.6 | 4.5 |
| *Latin America* | | | |
| GDP | 5.0 | 4.5 | 4.8 |
| Population | 2.8 | 2.9 | 2.9 |
| GDP *per capita* | 2.1 | 1.6 | 1.8 |
| *Middle East* | | | |
| GDP | 6.0 | 7.2 | 6.5 |
| Population | 3.0 | 2.9 | 3.0 |
| GDP *per capita* | 2.9 | 4.2 | 3.4 |
| *Industrial countries* | | | |
| GDP | 4.0 | 4.8 | 4.3 |
| Population | 1.2 | 1.2 | 1.2 |
| GDP *per capita* | 2.8 | 3.6 | 3.1 |

*Source:* Pearson, *Partners in Development* (Report), Annex II, p. 358, New York, N.Y., 1969, 400 p.

*Note.* Eighty developing countries covering approximately 97 per cent of the GDP of all developing countries are shown in this table.

During the period 1950–67, the GDP rose more quickly in the developing countries (4.8 per cent) than in the industrial countries (4.3 per cent). However, progress was slower in Africa and South Asia than in the industrial countries. Compared with the period 1950–60, the pace of growth from 1960 to 1967 was slower in the LDCs, where it rose from 4.6 per cent to 5 per cent, than in the industrial countries (4 per cent to 4.8 per cent).

The population growth rate from 1950 to 1967 was twice as high in the LDCs (2.3 per cent) as in the industrial countries (1.2 per cent). This rate is particularly high in the Middle East (3 per cent). Over the past two decades, the population growth rate in the LDCs has risen (from 2.2 per cent to 2.5 per cent), while it has remained constant in the industrial countries (1.2 per cent). The *per capita* GDP over the same period rose at the rate of 2.4 per cent a year in the LDCs and 3.1 per cent in the industrial countries. In the last two years, the pace of *per capita* growth has stepped up in the Middle East, Southern Europe and East Asia, has marked time in South Asia and has slowed down in Africa and above all in Latin America.

But the situation is much less satisfactory if the GDP *per capita* is considered instead of the over-all GDP: owing to rapid population growth (the average for the LDCs is double that of the DCs), *per capita* growth is lower in the LDCs than in the DCs. As a result, the world is not moving towards a better distribution of the available resources per head of the population but towards increasing disparities instead. This conclusion is borne out by developments over the period 1960–67. The situation can be illustrated simply by our *per capita* growth equation:

$$\begin{array}{ll} & r_y = r_Y - r_P \\ \text{LDCs} & 2.5 = 5 - 2.5 \\ \text{DCs} & 3.6 = 4.8 - 1.2. \\ \text{(industrialized)} & \end{array}$$

The recent trend can also be interpreted in another way. Growth is of approximately the same order of magnitude in the DCs and LDCs, but half (2.5/5) of the LDCs production growth is taken up by their population growth, whereas the DCs need only 25 per cent of their economic growth to cover their population increases.

The situation in respect of the large LDCs can be gauged from Table 4A in Appendix 2. It is unfortunate that the production series (1960-67) and population series (1963–68) do not relate to the same base period, as this makes comparisons more difficult. However, the growth of *per capita* GDP was probably particularly low in the countries of Africa, as well as in Indonesia (where it may even have been negative), India and the Philippines, i.e. in some of the largest Asian countries.

**20 Trends in standards of living.** United Nations commentators consider that, between 1960 and 1967, private consumption did not keep pace with population growth [2, p. 34].

*Per capita* private consumption dropped sharply in Africa (in almost half the countries of that continent). It also fell in almost a quarter of the LDCs in Asia and in a fifth of the countries of Latin America [2, p. 34, 35].

Marked disparities are evident in nutrition levels.

The relationship between the development of supply and that of demand with respect to food products will be studied in detail in Part II. Here we need merely quote the comments of the United Nations experts:

> . . . the available estimate regarding protein supplies is similar to that on calories: the developing countries registering an improvement during the period 1960–1967 outnumbered those in which there was some deterioration by three to one. But the latest information suggests that the great majority of developing countries consume far less protein than that designated as standard physiological requirements [2, p. 47].

And the situation is doubtless the same in regard to calorie intake.

Significant progress has been made in improving health standards. Collective campaigns have made it possible to eliminate malaria from most of the areas of the world where it used to be rife, while the death rate due to major epidemic diseases such as plague, cholera and smallpox has been substantially reduced and considerable efforts have been made to improve health services. The number of people to each doctor is a useful pointer to the results achieved. It fell from about 5,000 in 1952 to about 3,500 in 1966. In the industrial countries, however, it fell from 880 to 750 during the same period [3, p. 41].

The infant mortality rate has been considerably reduced, resulting in a decline in the over-all death rate and an increase in life expectancy and natural population growth.

TABLE 6. Average annual rate of growth in primary- and secondary-school enrolment (1950–65)

| | Primary | Secondary |
|---|---|---|
| LDCs | 6.8 | 9 |
| Africa | 7.8 | 9.4 |
| South Asia | 7 | 7.5 |
| East Asia | 4.8 | 11.7 |
| Southern Europe | 3 | 8.1 |
| Latin America | 5.4 | 9.6 |
| Middle East | 8.5 | 13.4 |
| Industrial DCs | 1.8 | 6 |

*Source:* Pearson, *Partners in Development* (Report), p. 42, New York, N.Y., 1969, 400 p.

Although these remarkable results bear witness to the fact that some progress has undeniably been made, they nevertheless raise a number of questions as to the future. The speed at which populations are growing—the population growth rate in the LDCs for the period 1960–67 was 2.5 per cent compared with 2.2 per cent in the period 1950–60 [3, p. 358]—means that the rate at which new job opportunities are created will have to be stepped up if an increase in unemployment is to be avoided, and this in turn will require an increase in the rate of investment. In addition, the rise in population growth rates increases the number of young people dependent on adults, the cost of health and education services, etc. In other words, it reduces the share of the GDP which can be earmarked for increasing the volume of goods available *per capita*. If the birth rate of some countries does not drop, efforts to improve the quality of life will be seriously jeopardized.

This may appear all the more disquieting when it is considered that the trend we are examining has not yet ended, since the mortality rate of 17 per 1,000 in the LDCs is still twice as high as that in the rest of the world (9 per 1,000).

In education, there has been 'spectacular change' [3, p. 41]: the fact that growth rates for school enrolments are a long way ahead of population growth rates shows that progress has clearly been made, as can be seen from Table 6.

This effort, taken together with the adaptation of education to development objectives, should bear fruit in the coming decades.

However, the progress to be made is still considerable. In 1965, almost half the school-age group was not enrolled in primary education in three-quarters of the developing countries of Africa, in half those of Asia and one-third of those in Latin America [2, p. 62].

**21 Preliminary conclusion.** The purpose of this Introduction was merely to present a number of indicators which are used for measuring certain aspects of inequality in development and to highlight the inequalities involved.

The statistics available, as indeed any on-the-spot examination of the situation, prove the uneven nature of development. The inequality is plain enough when the averages for the developed world are compared with those for the underdeveloped world. It is even more glaring if comparisons are made between individual DCs and LDCs. But national averages also conceal internal disparities, and if the available statistics made it possible to effect comparisons between the different socio-economic categories, the disparities would be still more flagrant.

Significant results were obtained during the First Development Decade. During the period 1950–67, the GDP increased at the rate of 4.8 per cent in the LDCs, i.e. more swiftly than in the industrial countries, where the rate was 4.3 per cent. The 5 per cent target for the First Development Decade was reached in 70 per cent of the low-income countries and some twenty countries even managed a rate of 6 per cent [3, p. 28]. And yet this growth was not optimal and it could have been improved by making better use of the available production capacity.

However, it has to be acknowledged that the marked growth rate in some countries is largely due to the extraction and export of sub-oil resources (Iran, Iraq, Kuwait, Libyan Arab Republic, Panama, Saudi Arabia) and that this growth is not accompanied by the structural changes which are essential to development. Furthermore, most of the high-growth countries are small countries, whereas the growth rate is relatively low in the largest of the large LDCs, such as Zaire, Nigeria, India and Indonesia.

But the most revealing picture is obtained by comparing *per capita* growth rates. During the period 1950–67, the growth of the *per capita* GDP was 2.4 per cent in the LDCs and 3.1 per cent in the DCs. The gap between the developed and underdeveloped regions of the world is therefore widening. Considerable efforts will have to be made by some countries. India, for example, has a *per capita* GDP of about half the current average for the LDCs, and it would need twenty-eight years with a growth rate of 3 per cent a year to reach the average. In point of fact, however, its annual growth *per capita* seems to have been only about 1 per cent per annum in recent years.

A comparison of the DCs and LDCs shows the price that has to be paid for accelerated population growth in the latter. However, the conclusions which have to be drawn are by no means simple. Reducing population growth will not in itself solve the development problem. Underdevelopment is a complex situation, stemming from historical processes and also related to structural impediments, the nature of which we shall now proceed to analyse, paying particular attention to the relationship between agriculture and underdevelopment (Part I) and to that between agriculture and development (Part II).

## Check test (basic concepts)

| Statements | True | False | Don't know | Subsection |
|---|---|---|---|---|
| 1. National production is composed exclusively of material production. | | | | 3 |
| 2. Value added is equal to total production less intermediate consumption. | | | | 4 |
| 3. $GDP_m = GDP_c - Su + IT$. | | | | 5 |
| 4. The degree of dietary satisfaction is measured by the actual quantities of calories and proteins consumed. | | | | 11 |
| 5. If the death rate is 30 per 1,000 and the birth rate is 15 per 1,000 the natural growth of the population is 2 per cent. | | | | 12 |
| 6. The value of production for year *n* comprising *i* products estimated at current prices is written as follows: $V_n = \Sigma_i p_{in} q_{in}$. | | | | 14 |
| 7. With respect to agricultural production, the production growth rate for a given period is calculated on the basis of the values for the first and last years. | | | | 16 |
| 8. *Per capita* growth is equal to total growth divided by the growth in population. | | | | 17 |

This test consists of eight statements which may be true or false. A cross should be marked in the appropriate box or under 'Don't know' if the answer is not known. The last column gives the number of the subsection containing the correct answer. Do this test before embarking on the exercises and topics for group discussion on the pages that follow.

## Revision exercises

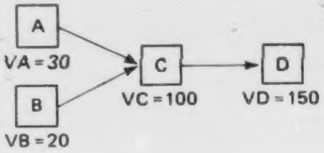
1. The diagram below represents the flows between four production units, all of which contribute to the manufacture of the final product F.

   (*a*) Calculate the total value of production;
   (*b*) Calculate the value added.

   For A and B, it is assumed that the total production is equal to the value added.

Let it be assumed that C and D merge. Accordingly:

(*c*) Calculate the total production;
(*d*) Calculate the value added;
(*e*) What are your findings?



2. Given the following basic aggregates: $GDP_m = 100$, $Su = 2$, $IT = 10$, $A = 9$, $NRA = -4$, calculate the following:
   (*a*) $GDP_c$;
   (*b*) $NDP_c$;
   (*c*) $NNP_c$.
3. In 1967, the percentage distribution of Kuwait's GNP was as follows:

| GNP | Co | GCF | $Ex_n$ | NRA |
|---|---|---|---|---|
| 100 | 56 | 19 | +61 | −36 |

   Comment on this distribution pattern.
4. According to Malthus, the population doubles every twenty-five years. What population growth rate does this entail?
5. At an annual growth rate of 3 per cent, how long would it take India, with a $GDP_c$ of 80, to catch up with France's present GDP of 2,560? (At the rate of 3 per cent a year, production doubles in twenty-four years.)
6. Given a country in which the national income increases at the rate of 4 per cent a year and its population at the rate of 2 per cent:
   (*a*) By how much does the average *per capita* income increase?
   (*b*) How is production growth distributed between population growth and *per capita* growth?
   (*c*) What would be the *per capita* consumption growth rate if the population growth rate was halved?

## Topics for group discussion

1. Have you ever taken part in or witnessed a statistical survey? Describe what took place. Are statistical data important for a country? How could they be improved?
2. Draw up a list of activities that come within the category of 'services'. Discuss their utility from the standpoint of development. Is it desirable to evaluate them and take them into account when calculating national production?
3. What, in your opinion, would be the most satisfactory criteria for assessing living standards? Should these criteria be the same for town-dwellers and country-dwellers? Can you suggest any special criteria for country-dwellers?
4. Is the average *per capita* income a satisfactory indicator in your country? Describe the main factors contributing to income disparities.
5. Draw up a list of the changes that have occurred in your country (town, village) during the past five years. What, in your opinion have been the most important changes?

# Part I

## *Agriculture and underdevelopment*

# Introduction
## *Development—a historical process*

**22 Importance of agriculture in the LDCs.** Agriculture is an important branch of the whole economy in most of the developing countries. Its importance can be gauged from the percentage of the population engaged in agriculture compared with the total population, from the size of the agricultural GDP in relation to the total GDP or else from the place held by agricultural produce in total exports (see Table 7).

Judging by the three criteria considered, sub-Saharan Africa is the most agricultural region of the LDCs taken as a whole, while Latin America is the least agricultural, although it exports quite a high proportion of agricultural products.

Table 5A in Appendix 2 shows marked disparities with the DCs. By 1965 or thereabouts, farmers represented only 4 per cent of the total population of the United Kingdom and the agricultural GDP accounted for only 3 per cent of the total GDP (but then the United Kingdom imports almost half the food it consumes). In the United States the corresponding figures were respectively 8 per cent and 4 per cent, and in the Soviet Union 32 per cent and 23 per cent.

In the LDC group, Ethiopia had the largest percentage of agricultural population (89 per cent), as well as the largest proportion of agricultural produce in the total gross domestic product (66 per cent). The country with the lowest percentages was Argentina, with 20 per cent and 17 per cent respectively.

The largest of the large LDCs, such as India and Pakistan, had more than 70 per cent of their population engaged in farming and the agricultural GDP accounted for more than 45 per cent of the total GDP.

The role of agriculture in the economy as a whole is seen to be even more important if it is expressed as a percentage of total material production (agriculture plus industry, services excluded), rather than as a percentage of the total GDP.

TABLE 7. Relative importance of agriculture in the economy of the LDCs: average 1961–63 (percentages)

| Zone | Agricultural population | Agricultural GDP | Agricultural exports |
|---|---|---|---|
| Africa south of the Sahara | 82 | 40 | 59 |
| Asia and the Far East | 70 | 37 | 60 |
| Latin America | 43 | 20 | 49 |
| Near East and North-West Africa | 67 | 29 | 43 |

*Source:* FAO, *Provisional Indicative World Plan for Agricultural Development. Summary,* P. 2, Rome, 1970, 72 p.

TABLE 8. *Per capita* GDP and agricultural GDP per person engaged in agriculture (in dollars)

| Region | *Per capita* GDP | Agricultural GDP per head of agricultural population |
|---|---|---|
| Africa south of the Sahara | 88 | 43 |
| Asia and the Far East | 87 | 46 |
| Latin America | 294 | 138 |
| Near East and North-West Africa | 174 | 73 |

*Source:* FAO, *Provisional Indicative World Plan for Agricultural Development. Summary*, P. 2, Rome, 1970, 72 p.

Table 7 shows clearly that the ratio of the agricultural population to the total population is always much higher than that of the agricultural GDP to the total GDP. The corollary is that the GDP per person engaged in agriculture is lower than the *per capita* GDP, as can be seen in Table 8.

The low GDP per 'agricultural worker' suggests that the productivity of agricultural labour is low and that the level of agricultural income is likewise low.

If the importance of agriculture in the national economy and the low productivity of labour in the agricultural sector are viewed together, there may be a strong temptation to regard agricultural underdevelopment as the factor mainly responsible for global underdevelopment. An approach along these lines, however, cannot stand up to careful analysis of the structures and mechanisms of underdevelopment. Even so, it is important to bear in mind that, since underdeveloped societies are agricultural societies, their agricultural infrastructure directly conditions their economic activity, their production relations, social institutions and value systems. Hence it seems appropriate to start by outlining the historical evolution of agriculture and of traditional agricultural societies.

Like development, underdevelopment is the outcome of a historical process of social change. Traditional societies were built on traditional agriculture, but these societies have been transformed by the interplay of socio-economic forces. A basic factor in this process of change is European penetration into traditional societies. By convention, we shall call traditional societies existing prior to colonization primary traditional societies, while we shall refer to indigenous societies that have been changed by Western penetration as secondary traditional societies. Over the past decade, during which many LDCs became independent, traditional societies have gone through a further process of change as a result of the spread of education and information media and of the new conditions created by attempts to set national development processes in motion. This latter process of change can be said to be moving traditional societies from the secondary stage to the tertiary stage. This changeover corresponds to a transitional period during which the conditions required for sustained growth are laid down, so that the traditional society eventually gives way to the progressive society.

**23 Stages of growth.** The historian W. W. Rostow has summed up the entire historical process of development in the following broad terms: 'It is possible to identify all societies, in their economic dimensions, as lying within one of five stages: the traditional society, the preconditions for take-off, take-off, the drive to maturity and mass consumption.'[1]

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[1] W. W. Rostow, *The Stages of Economic Growth*, p. 4, London, Cambridge University Press, 1960, 178 p.

Traditional society is essentially agricultural, with its potential capacity limited by an elementary and scarcely evolving technology and a graded social structure based on the ownership of land, which is the main source of wealth.

The preconditions for take-off are established during a transitional period in which internal forces for change, i.e. shifts in the relationships between social forces, and external forces, such as invasions and the disintegration of traditional societies, pave the way to economic progress.

'Take-off is the interval when the old blocks and resistance to steady growth are finally overcome.' [1] Take-off in the Western world is associated with the technological and social revolutions which occurred in the eighteenth century and which set off an on-going process of economic growth in Europe and America. Growth is initially founded on the development of spearhead or 'leading' industries which can act as the driving force in fostering progress and promoting other industries and activities, and also on the growth of agricultural productivity.

The drive to maturity corresponds to the widespread dissemination of the methods, mental attitudes and structures forged in the most go-ahead sectors of the economy. The economy is then in a position to mobilize almost all its resources and to attain a high degree of productivity in all sectors, including agriculture.

The age of mass consumption may commence with the period of widespread high productivity: the growth of production and *per capita* income makes it possible to provide an increasing number of goods for general consumption and this brings about changes in manufacturing processes. At this stage of what Galbraith has called the 'affluent society', production and consumption of services tend to predominate.

Rostow's book has found a wide audience and the terminology he uses for the stages of growth has become standard vocabulary. However, two basic categories of criticism have been levelled against Rostow's exposition: (a) he does not deal with the socio-economic systems such as capitalism, socialism or others, within which the successive stages of growth can develop, nor does he examine the production relations within such systems: (b) the sequence of successive stages through which societies must pass to reach the mass consumption stage is based on a linear view of history, a view implying a high degree of optimism as to the prospect of mankind as a whole reaching the final stage.

**24 The Marxist approach: the mode of production.** The basic concept in the Marxist approach to the process of historical change is that of the mode of production. The way man produces material goods such as food and clothing to enable society to live and develop is the mode of production of that particular society. The mode of production can be broken down into three sets of components: productive forces, production relations or the mode of production proper and the legal and political superstructure.

Productive forces comprise natural resources (climate, earth, water, flora and fauna), instruments of production (tools, machines, mechanical energy, selected species, etc.), human beings, who apply the instruments of production to the natural resources, the experience of production (the habit of performing productive work, the knowledge acquired in the process) and the organization and division of social labour.

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1. Rostow, op. cit., p. 7.

In order to produce the goods they need to live, men enter into definite relations. Production takes on a social character and the relations that are established between men in the production process define the social classes and identify the modes of production. These relations are marked in particular by the structure of property and the division of labour. When Marx wrote the Communist Party Manifesto in 1848, he made a distinction between two basic social classes in the society in which he lived: the 'capitalists', the owners of the means of production, and the 'proletariat', which only possessed the power of its labour.

The superstructure is composed of all the legal and political institutions taken as a whole. Productive forces, production relations and social classes are the key to understanding the world as a whole—the spheres of law (in which production relations are enshrined in a system), of politics (the State being the reflection of the dominant classes,) of ideologies and mental attitudes.

Marx wrote, in the preface to *A Contribution to the Critique of Political Economy* (1859):

> In the social production which men carry on, they enter into definite relations that are indispensable and independent of their will; these relations of production correspond to a definite stage of development of their material powers of production. The sum total of these relations of production constitutes the economic structure of society—the real foundation on which rise legal and political superstructures and to which correspond definite forms of social consciousness.

The mode of production concept provides an all-inclusive image of society. It offers the immense advantage of not dissociating the analysis of economic facts from that of sociological facts. Serious conceptual and practical difficulties can, in fact, arise from separating the two.

**25 Processes of social change.** Starting from the gradual growth of productive forces and by analysing the development of the relations of production, of property and of social classes and functions, Marx identifies a historical series of modes of production. These modes can be very summarily defined as follows: (a) *the patriarchal mode of production*, marked by ownership on the part of the 'extended family' and social relations of the family type; (b) *the slave* mode, characterized by the ownership of slaves and by master-slave relationships; (c) the *feudal* mode, based on exploitation by a warrior class of a mass of producers chained to the land (serfs); (d) the *capitalist* mode, based on private ownership of the means of production and on specific production relations between the capitalists, who own these means, and the proletariat, which is 'compelled' to offer the power of its labour on a market.

The historical process of change and of the succession of productive modes constitutes the process of social change proper.

The growth of productive forces (prospection and the better utilization of natural resources, the development of instruments of production and energy sources, progress in apprenticeship, education, technical information, etc.) is of considerable historical importance.

In the process of change, Marxist analysis ascribes a leading role to material productive forces and stigmatizes the resistance to change of the governing classes (historical materialism). But the development of productive forces increases the 'internal contradictions' inherent in the mode of production contradictions which arise between the growing productive forces and the traditional social structures.

Changes in the material conditions of production tend to demolish traditional social structures.

Reformers believe that it is possible to adjust social structures to the new material conditions of production and to pursue the growth process already started. Marxists reject this hypothesis: they believe that the resistance of the privileged classes can only be broken by revolution, which will enable political power to be taken over by the organized proletariat (theory of the class struggle).

**26 Development: a historical process.** All writers are agreed that the processes of social change and development are historical processes, regardless of whether they attribute a special role to material forces (historical materialism) or to ideas (historical intellectualism) or whether they attach decisive importance to revolution or place all their hopes in reform. Development is not a 'miracle', that is an instantaneous change in the situation brought about by the forces foreign to the mode of production. Development is a historical struggle, in which epoch-making revolutions and reforms stand out as milestones in the slow process of socio-economic change.

The West took about two centuries to advance from take-off to 'mass consumption'. It is true that the experience amassed, the technology now available and co-operation between nations can reduce the length of time needed, but development is still inevitably a long drawn-out process.

When we speak of development as a historical process, we also mean that the process takes place in a specific global socio-economic context and has its starting-point in the history of a nation. Human experience of development is enriched by the history of the developed nations' progress, which can help the underdeveloped countries to achieve their own development, but any development policy must invariably be adapted to the historical conditions specific to each nation. Development experiences cannot be transferred wholesale from one country to another. The underdeveloped countries have in part to devise their development process themselves, in the light of their own specific conditions.

A history of agriculture situated in a general historical context and taking its bearings from the mainstream of historical thought would be invaluable for interpreting contemporary situations and for basing development processes on an objective analysis of the facts. This history has probably still to be written.

Here, we shall confine ourselves to putting forward certain considerations with a view to marking the first steps along a path which has yet to be traced and prompting further thinking on the subject. We shall examine in turn traditional agricultural societies and the changes they have undergone, the forms of socio-economic organization encountered in agriculture and agricultural underdevelopment as a whole.

# 1

# *Traditional agricultural societies and their transformation*

**27 Introduction.** Primary traditional agricultural societies display some variety, but their key feature is obviously that they are agricultural—their main economic activity being concerned with satisfying food requirements—and traditional, this second aspect being somewhat more difficult to define. Traditional economies are capable of change, but the process is slow, even very slow: young people owe most of their knowledge and skills to their elders.

Traditional agricultural societies have other features in common. They are relatively closed and are therefore characterized by processes that are directed towards supplying their own wants, building their own amenities and consuming what they themselves produce.

These societies ensure that the production process is continued by setting aside seeds and seedlings from harvests and by providing all, or almost all, their means of production from their own resources. The basic social unit is responsible for developing and protecting the land, making tools, building homes and producing goods for consumption. Subsistence comes from food-gathering, hunting, fishing and agricultural production, all activities which are organized according to the needs of the producers. Trade is slight or non-existent and agriculture is essentially of the subsistence type.

Traditional agriculture is based on biological energy (of human, and some times animal, origin), which is closely linked to the natural habitat and consequently very dependent on it. As production largely depends on the number of workers, the extension of agriculture depends on population growth.

Every child born provides one more producer and also one more consumer. As long as traditional societies are able to increase production as the population grows, a balance—at a level which varies and may be more or less satisfactory—can be maintained between population growth and subsistence. Experience proves, however, that when there is no more 'vacant land' and when the population has to organize its life in a finite area while using virtually the same technology as before, production does not keep pace with population. This phenomenon has long been known and was formulated and analysed by the classical European economists in the late eighteenth and early nineteenth centuries.

Consideration of the production function in traditional agriculture makes it possible to determine from a theoretical standpoint the periods and stages of traditional agricultural growth and to examine the changing pattern of relations between agricultural production and food requirements in the light of population growth, i.e. of the number of producers and consumers.

Differing traditional agricultural societies have been built up, at various stages, on the basis of traditional agricultural growth. Different societies may also emerge at the same stage, although these societies inevitably have some features in common.

These 'primary' traditional societies are altered, as we have mentioned, by the interplay of internal and external forces. We shall only deal here with those changes which have been brought about by Western penetration of traditional societies.

## Traditional agricultural growth: a theoretical model

**28 The production function in traditional agriculture.** Agricultural production (Y) is a function of the factors of production: land (S), labour (N) and capital investment (K), i.e. the means of production used to develop the land and to produce.

This function can be represented by the expression:

$$Y = f(S,N,K). \tag{1}$$

If we divide by N, this becomes:

$$\frac{Y}{N} = f\left(\frac{S}{N}, 1, \frac{K}{N}\right)$$

$$Y = Nf\left(\frac{S}{N}, 1, \frac{K}{N}\right).$$

In view of the conditions defined above, K/N is virtually constant: in the most simple situations, each worker has the tools (spade and sickle) that are essential to his activity.[1]

The production function in traditional agriculture can be written simply as follows:

$$Y = N\phi\frac{S}{N}. \tag{2}$$

Production depends on the number of workers (N) and is a function of the surface area available per worker S/N.

The production available for human consumption is equal to the total production, less the amounts set aside to enable cultivation to continue and the production process to expand with the growth in population. Producers seek to satisfy at least their subsistence needs: each worker has to produce enough for his own sustenance and that of the inactive members of his family. If $c_{sub.}$ is the subsistence consumption per person and $n$ the number of people dependent on each worker, the subsistence production per worker ($p_{sub.}$) should be at least equal to:

$$p_{sub.} = c_{sub.}(1 + n).$$

**29 Growth by extension of the area under cultivation.** Two cases have to be considered on the basis of expression (2): that in which, because the surface area (S) can be increased, growth is the result of an extension process, and that in which, because (S) is constant, growth involves an intensification process.

The case of growth by extension corresponds to the development of an area where the population build-up is not complete. On the assumption that technological conditions are constant and that the agricultural land stock is homogeneous

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[1] The spade in Europe, the *daba* in certain parts of Africa and the *picote* in Latin America are typical of the tools used in this kind of economy.

(constant yields per hectare in space and time, $y$), a constant area cultivated per worker ($s_{cult.}$) enables the requisite subsistence production to be obtained:

$$s_{cult.} = \frac{p_{sub.}}{y}.$$

The total production Y and the total cultivated area $S_{cult.}$ increase in proportion to N:

$$Y = Np_{sub.} = Ns_{cult.} \times y$$
$$Ns_{cult.} = S_{cult.}$$

Quite clearly the time will come when the entire land stock will have been developed and when the total area cultivated ($S_{cult.}$) will be equal to the area capable of being cultivated in the given state of technical knowledge.

This simplified assumption is open to question. For example, the assumption that the land is of homogeneous quality is an oversimplification: in most cases, the fertility of the land varies. It is possible to make the logical assumption that 'pioneers' develop the most fertile land first, as Ricardo supposed, but this logical process implies a free choice in peaceful conditions. In reality, as a result of historical circumstances, insecurity, tribal disputes, wars and conquests, land is distributed very unevenly among traditional populations. Population densities are much higher on land that is not very fertile but may have been a historical place of refuge than on fertile land conquered by force of arms.

**30 Growth by intensification of labour.** Let us now consider a growing population (N) on a given land area (S): as the number of workers increases, the ratio S/N decreases and the area available per worker is reduced; in other terms, the population density increases. Hence production per hectare must inevitably be increased if the objective of the traditional economy is to be attained. The change-over from extensive to intensive cultivation involves choosing the species giving the highest yields (but demanding most work), increasing crop dressings, hoeing and weeding, developing the agricultural land stock (laying out terraces for hill cultivation, building windbreaks, etc.), changing from dry to irrigated farming, increasing the number of crops grown on the same land over a given period, in short, adapting the cultivation system and the agricultural land stock to a growing population.

The agrarian landscapes of many countries still bear the marks of processes involving the intensification of human labour, or are a living witness to them.

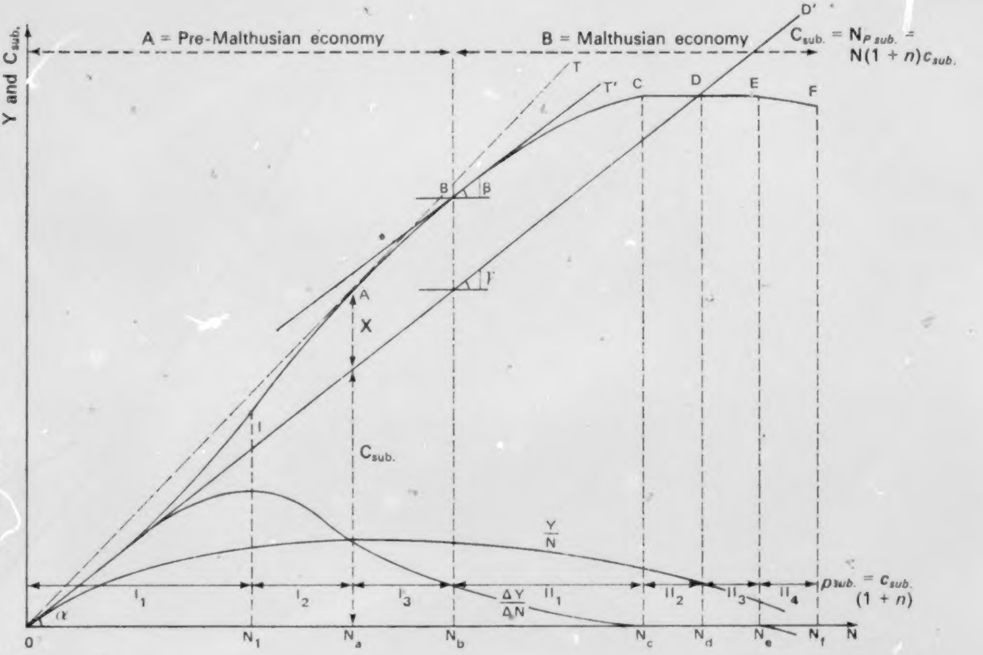
Since it is assumed that the material capital in the shape of tools does not increase, the growth of production per hectare requires an increasing quantity of labour. Population growth determines and makes possible the growth of production, but the one is not proportional to the other.

**31 The law of diminishing returns.** Agronomic experiments have shown that when one factor of production is made to vary while the others remain constant (other things being equal), production does not increase proportionally. The law of diminishing returns has a general character and applies especially when labour is the variable.

When the quantity of labour N increases in relation to the population growth $N(1 + n)$, production Y increases first more than proportionally and then less than proportionally.

Figure 6 illustrates the different stages in the process of growth by the intensification of labour. It shows variations for: (a) total production Y; (b) the average production per worker or average productivity of labour $w_o = Y/N$; (c) the marginal production per worker or marginal productivity of labour defined by $w_a = \Delta Y/\Delta N$. It also gives some information on consumption which we shall be using later.

FIG. 6. Traditional agricultural growth.



It will be observed that average productivity is measured by the tangent of the angle $\alpha$ and marginal productivity by the tangent of the angle $\beta$: the average and marginal productivities therefore vary respectively as each of these angles (follow this variation on the graph, paying particular attention to points I, A and C).

**32 Population and subsistence.** The fundamental problem is that of balancing resources against needs or production against population.

On the assumption that the minimum objective of the traditional economy is so satisfy subsistence needs, the line parallel to the horizontal axis represents tubsistence production per worker such that the following condition is satisfied:

$$p_{sub.} = c_{sub.}(1 + n).$$

Hence the graph can be used to compare subsistence consumption with the average and marginal productivity of labour.

Furthermore, the total subsistence consumption is proportional to the population:

$$C_{sub.} = N(1 + n)c_{sub.}$$

This is represented by the straight line OD′.[1]

At point D we have:

$$\text{production} = \text{consumption}$$

$$Y = C_{sub.} = Np_{sub.} = N(1 + n)c_{sub.}$$

The angle $\gamma$ measures the marginal consumption per worker ($c$), which is obviously constant and equal to $p_{sub.}$ when $\Delta N = 1$.

This being so, we have all the values we need to define the periods and stages of agricultural growth by intensification of labour.

Two basic phases can be identified on the graph:

First, the period during which production grows relatively more quickly than needs ($\beta < \gamma =$ period I), which we shall call the period of pre-Malthusian economy after Malthus who, in 1798, arguing from European economic circumstances of his time, formulated his famous principle whereby population increases faster than production: quite clearly, this principle does not hold good in phase I of our graph.

Second, the period during which production grows less quickly than population ($\beta < \gamma$), which we shall call the period of Malthusian economy, as it corresponds exactly to the conditions described by Malthus.

Obviously, point B situated at the intersection of the two phases is a key point, representing a stage in traditional growth to which we must turn our attention.

**33 Pre-Malthusian economy.** At the beginning of the intensification process, yields and total production increase (period $I_1$); this increase is explained by the fact that the intensification process results in improved adaptation of the land area to the quantity of available labour (S/N) and better organization of production, although the means of production remain virtually the same. But the growth in the number of workers soon causes a decline in the marginal productivity of labour (period $I_2$) and then in average productivity (period $I_3$). The economy then enters the phase of diminishing returns. Nevertheless, during the period of pre-Malthusian economy, the average productivity of labour always remains higher than the requisite subsistence production, as does the marginal productivity, which becomes equal to the subsistence production at point $N_b$.

Many writers have noted the community character of traditional societies, which means that individual consumption is not proportional to individual production.

In phase I, as the average productivity of labour is higher than the requisite average consumption, total production (Y) is higher than total subsistence consumption ($C_{sub.}$), and a food surplus or excess (X) is obtained.

$$X = Y - C_{sub.}$$

In point of fact, this surplus goes on increasing up to point $N_b$.

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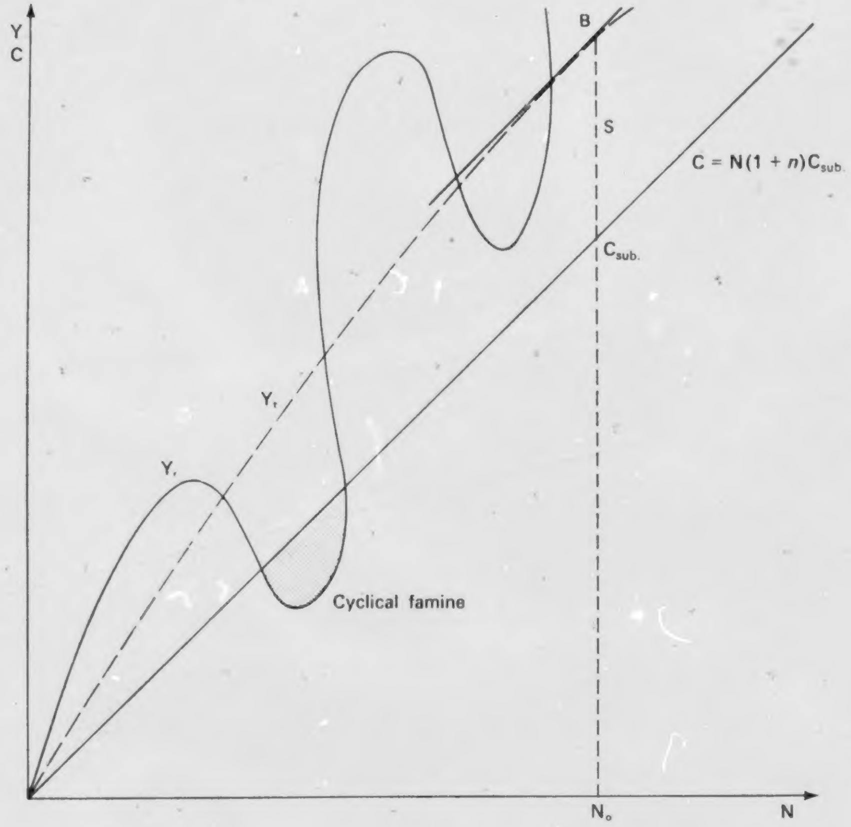
[1] In Figure 6, the slope of the straight line OD′ is arbitrary and the consumption curve could intersect the production function at a point other than D. The representation we have chosen is justified by its instructive value. In addition, OD may correspond to actual subsistence consumption (consumption cannot exceed production).

In traditional economies, actual consumption may be higher than the requisite subsistence consumption but traditional populations wisely build up food stocks, since production is still very dependent on natural conditions, harvests fluctuate and, if no stocks have been set aside, this type of economy is liable to fall victim to cyclical famines (poor harvests) (Fig. 7). The production of a surplus is a minimum requirement in this type of economy. In the pre-Malthusian economy, we can imagine periods when there were 'green pastures', well-stocked granaries, vast herds and large families, and patriarchs gazed upon their children and grandchildren down to the *n*-th generation. These are the images handed down in ancient tomes or by oral tradition and which are embodied in the belief, once so widespread in human history, that the golden age of mankind was situated in the past.

FIG. 7. Cyclical famines in the pre-Malthusian economy. In the conditions of the traditional economy, which closely resemble natural conditions, actual (or real) agricultural production ($Y_r$) fluctuates sharply compared with the production trend ($Y_t$). In the pre-Malthusian economy, cyclical famines may occur if stocks have not been built up or if they have been exhausted owing to several successive years of famine.



**34 Malthusian economy.** Phase II is that described by Malthus: total production continued to grow with the rise in population but at an ever slower pace. Between C and E it remains constant, and beyond E it decreases. This latter stage is by no means theoretical; it corresponds to the destruction of forests by indiscriminate clearing, to over-working of land and excessive grazing resulting in the weathering and destruction of the soil and hence in a loss of productive capacity. During phase II, the average and marginal productivities drop. This decline is the result notably of the reduction in the land area per worker (S/N), of excessive fragmentation of the land and of the consequent drop in quality. (Mention might also be made of Ricardo's thesis whereby increasingly infertile land is cultivated.)

At point C, marginal productivity becomes nil and the economy enters the stagnation stage (period $II_2$).[1]

At point D, total production is equal to total consumption and average productivity is equal to subsistence production: $Y = Np_{sub.}$; $Y/N = p_{sub.} = c_{sub.}(1+n)$.

At this point, visible savings are nil, stocks cannot be built up to fend off cyclical famines and society, having exhausted the possibilities of adapting the available means of production, cannot use the surplus labour. Underemployment, measured by productivity or the number of days worked, becomes structural, as do famines (period $II_3$).

As the economy is incapable of raising subsistence to the consumption level, it is the population which has to adapt itself to the volume of subsistence available. At that point, famine is the dreadful, and yet 'traditional', instrument of adaptation unless, as Malthus suggested, mankind has the good sense or the techniques required to control the birth rate.

Beyond E (period $II_4$), the situation becomes catastrophic and agricultural society is threatened with eclipse.[2] It consumes its land stock and may even be reduced to consuming its seed, seedlings, and livestock. Driven from their homes by extreme poverty, the population is liable to move aimlessly from place to place and probably take to plundering.

**35 The optimum population.** Point B marks the point of change-over from the pre-Malthusian to the Malthusian economy. Before B is reached, the marginal production per worker is higher than the marginal consumption, which is assumed to be constant. After B, marginal consumption is higher than the marginal productivity of labour. At B, the marginal productivity of labour is exactly equal to marginal consumption ($\beta = \gamma$). Point B, corresponding to an active population $N_b$ and a total population $N_b(1 + n)$, can be regarded as determining the optimum population. At this point, the average productivity is higher than the consumption needed for subsistence and the surplus or excess $X = Y - C$ is at its maximum. Stocks make it possible to combat cyclical famines and support the workers, so that they can make investments and thereby ensure continued growth.

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1. In the presentation adopted here, the model comprises stages with low marginal productivity of labour ($II_1$) and zero productivity ($II_2$ and $II_3$). However, economists often differ in their views on the productivity of labour in the LDCs. Our own view is that both the above cases may occur in practice. This question is particularly important from the standpoint of transfer of workers from agriculture to other sectors of the economy (see Part II).
2. Highly civilized peoples, such as the Maya of Yucatan, have disappeared after a long period of economic regression (P. Gourou, *Les Pays Tropicaux*, p. 58, Paris, Presses Universitaires de France, 1947). The same situation of decreasing total production is currently in evidence in some underdeveloped countries.

Beyond point B, stocks and investment in labour tend to become nil.

Before D is reached, the economy is under-populated in relation to the subsistence objective, but beyond D it is over-populated: the population's needs, even reduced to the minimum necessary to maintain life, are such that it is impossible to produce a surplus and the average productivity of labour soon falls below the subsistence consumption (catastrophe stage).

The most alarming phase of underdevelopment is obviously that of the Malthusian period. The population growth rate of about 3 per cent a year postulated by Malthus has been reached in many underdeveloped countries. At that rate, the population doubles in less than twenty-five years and unless drastic socio-economic changes are made, the stagnation and catastrophe stages lie ahead.

Only a change in the technical conditions of production will prevent the catastrophes some writers consider to be inevitable, but a change of this nature may have to be preceded by a change in the forms of socio-economic organization of production. We shall now examine these forms.

## Traditional societies

36 **Traditional growth and economy.** The foregoing analysis has been made assuming the existence of a traditional economy, i.e. of scarcely perceptible technological progress and constant capital per worker. Technological progress, especially if its pace is fairly rapid, will necessarily alter technological conditions and yields. Productivity per worker will increase and hence the point for the optimum population will move along the production curve. If the traditional society proves capable of devising new methods which make it possible to keep on increasing the productivity of labour, this obviously means that the society is no longer traditional and has become progressive.

Progressive societies and types of agriculture will be examined later. For the moment, we shall continue to reason in terms of the traditional society.

The expression 'traditional agricultural economy' actually covers economies that are at very different stages of traditional growth. Table 9 identifies the different types of agricultural economy as they emerge from our theoretical outline:

1. Economies with under-exploited resources (land being plentiful).
2. Economies with natural resources exploited under constant technical conditions: (a) in a pre-Malthusian situation; (b) in a Malthusian situation.

This breakdown into types is fundamental to our task, in so far as it can be useful in helping to define a development strategy, especially since it is bound up with changes in the size of the food surplus and in the degree to which labour capacity is employed.

37 **Types of traditional societies.** On the basis of traditional growth, corresponding to the stages of such growth and reflecting historical and geographical circumstances, differing types of traditional agricultural societies have emerged in the course of historical development—economies based on patriarchal systems, on slavery, on feudalism and on craftwork.

In analysing traditional growth, we argued in terms of 'average' production and consumption, which implicitly assumes that society is egalitarian and hence

TABLE 9. Traditional growth and typology of traditional economies (cf. Fig. 6): X = food surplus; $w_o$ = average productivity; $w_a$ = marginal productivity; N = active population; $p_{sub.}$ = subsistence production

| | Y | $S_a$ | $\frac{Y}{N} = w_o$ | $\frac{\Delta Y}{\Delta N} = w_a$ | $\frac{w_o}{p_{sub.}}$ | $\frac{w_a}{p_{sub.}}$ | Degree of employment | Famines | Types of growth |
|---|---|---|---|---|---|---|---|---|---|
| Under-exploited natural resources (land plentiful) | ↗ | | → | → | 1 | 1 | Full employment | Cyclical | By extension |
| Natural resources exploited under constant technological conditions<br>I. Pre-Malthusian period | ↗ | ↗ | | | > 1 | > 1 | Full employment | Cyclical | By intensification |
| $I_1$. Increasing productivity (average and marginal) | ↗ | ↗ | ↗ | ↗ | > 1 | > 1 | Full employment | Cyclical | Labour-based |
| $I_2$. Decreasing marginal productivity | ↗ | ↗ | ↗ | ↘ | > 1 | > 1 | Full employment | Cyclical | |
| $I_3$. Decreasing average productivity | ↗ | ↗ | ↘ | ↘ | > 1 | > 1 | Full employment | Cyclical | |
| II. Malthusian period | ↗ | ↘ | ↘ | ↘ | | | Under-employment | | |
| $II_1$. Decreasing surplus | ↗ | ↘ | ↘ | ↘ | > 1 | < 1 | Under-employment | Cyclical | |
| $II_2$. Stagnant economy<br>$II_3$. | → | ↘ 0 | ↘ | 0 | > 1<br>= 1<br>< 1 | 0 | Under-employment | Structural | Growth impossible |
| $II_4$. Catastrophe economy | ↘ | < 0 | ↘ 0 | < 0 | < 1 | < 0 | Under-employment | Structural | |

that land is distributed in accordance with family needs. In fact, ancient communities did work more or less on this principle.

But the idea of a world where all men are equal and the means of production are distributed in accordance with needs probably seldom concurs with the historical facts since it takes no account of the interplay of forces and its consequences. The phenomenon whereby individuals or communities appropriate to themselves an unfair share of the means of production introduces a new principle governing the distribution of production in the society as a whole.

Viewing the process of growth in its historical perspective, it is easy to see that the struggle for the possession of land becomes particularly acute during the Malthusian period of the economy and especially during the stagnation period. Some workers will be driven out and will swell the mass of unemployed and hence the number of beggars and thieves.

Some writers are of the opinion that, in periods when land is plentiful, the notion of land appropriation is meaningless because subsistence needs can always be amply satisfied. However, even at this stage, men can be appropriated as occurs in societies based on slavery: the masters make the slaves cultivate the land and their power depends on the number of slaves they own.

In feudal or semi-feudal systems, which often seem to be associated with a stagnating economy, the main landowner (the lord) is the bestower of both land and employment: he reigns over a wretched people stripped of all means of production and living in apparent submission, who rely solely on his power.

In such circumstances, the wretched poor may well believe that the golden age is behind them. Fortunately, however, this is not the case, for a large proportion of mankind has now emerged from the primitive period. A twofold revolution has been achieved: in technology, by the change in the technical conditions of production, and in social organization, by the change in production relations.

Towards the end of the traditional growth period, the allocation of resources can hardly ever be said to be optimal. Production relations usually take the form of interacting forces and theories postulating a world of equals are of little value in explaining historical fact.[1]

## Changes in traditional societies

**38 European expansion and changes in traditional societies.** European expansion, which started from the sixteenth century with the discovery and then the conquest of part of America, reached its peak at the same time as European capitalism with the conquest and the establishment of colonial régimes in many countries of the world. It profoundly altered primary traditional societies and, by grafting European structures onto traditional societies, created dualistic structures which are regarded as typical of the LDCs.

Rodolfo Stavenhagen identifies six fundamental processes of change in these societies: the introduction of a money economy, the introduction of private ownership of the land and of commercial monocultures, migrations of workers and the flight from the land, urbanization, industrialization and national

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[1] This is true of the marginalist theory which postulates a world of equals: the theory has admittedly a normative value as a signpost for action but it has no positive value inasmuch as it cannot explain concrete historical situations.

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integration of the LDCs.[1] Following this author's order, we shall comment on each of these processes in turn:

First, the introduction of money, or intensification of its use, was one important consequence of European expansion. The development of a money economy was bound up with the conversion of traditional taxes, which were paid in kind, into money taxes or the imposition of new taxes, with the growth of trade and the replacement of barter by money exchanges and, lastly, with the organization and expansion of wage-earning labour in accordance with the requirements of the government and the colonial economy.

Second, 'The development of capitalism gave rise throughout the world to the individual appropriation of land'.[2] Colonialization often went hand in hand with the expropriation of land belonging to the indigenous population, who were driven back onto land of inferior quality. European expansion was accompanied by an expropriation–appropriation process and the concentration of land in the hands of privileged social categories. This process started in Latin America from the fifteenth and sixteenth centuries onwards. In Africa and Asia, the expropriation–appropriation process was directly related to the creation and expansion of plantation agriculture.

Third, the development of new economic activities within traditional societies (mining and other industries) and of new forms of socio-economic organization of agriculture (plantations) gave rise to an increasing need for wage-earning labour, entailing significant migratory currents of workers.

These migrations took place both within countries and across national frontiers. In Africa, they assumed considerable proportions and affected 'hundreds of thousand' of people.[3]

Migrations may be of a temporary character—a worker may migrate several times in his life—or may be definitive, as in the case of the flight from the land, a phenomenon which is bound up with the process of workers' migrations and which is, in principle, a one-way traffic from the countryside to the towns. This aspect will be examined at length in Part II of this book under the heading 'Relations between Agriculture and Industry in the Development Process'.

Fourth, urbanization, a phenomenon which has become very important in recent years, represents a considerable factor in the transformations undergone by traditional societies. Although some towns in Latin America and Africa date back to the precolonial period, many towns were founded much more recently. They were created at European instigation to fulfil a number of definite functions of an administrative, military, commercial or other nature.

As the pace of migration from the countryside increases, 'shanty towns' are built and an urban sub-proletariat comes into being. This sub-proletariat gives rise to a number of economic and political problems. The phenomenon is very widespread in the LDCs and often reaches major proportions.

Fifth, industrialization in the LDCs has taken on a specific form bound up with Western development. It is usually confined to industries exploiting sub-soil resources or producing raw materials for export.

Finally, the emergence of nationhood has its roots in European expansion. In Black Africa, the new nations were mainly created out of the former colonies which were themselves created by the nineteenth century 'carving-up' of the continent. In Latin America, the nation-building process stemmed from the Spanish conquest and the colonial system which held sway for 300 years, from the sixteenth to the early nineteenth centuries. Most of the Latin American countries became independent at the beginning of the nineteenth century.

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[1] Rodolfo Stavenhagen, *Les Classes Sociales dans les Sociétés Agraires*, p. 77–86, Paris, Anthropos, 1969, 402 p.

[2] Stavenhagen, op. cit., p. 80.

[3] Stavenhagen, op. cit., p. 83.

In Latin America, as in Africa, the national integration process is far from complete: there are still marked ethnic and regional differences, especially in Africa.

The six processes described by Rodolfo Stavenhagen make it possible to understand the way in which traditional, and for the most part agricultural, societies have been transformed, in regard to their activities (industries, plantations), their way of life (urbanization, population movements, money economy), their social structure (development of private ownership, appearance of new production relations) and, lastly, their socio-political organization (process of colonization followed by national integration), social psychology and culture.

Traditional societies have, in fact, been doubly transformed: by the implantation of Western institutions, giving rise to a dualistic structure, and by the transformation—and at times destruction—of these societies attendant on this or on the development of relations with Western society.

At the close of the colonial period, the contemporary traditional societies, which we shall term 'secondary traditional', are obviously very different from primary traditional societies.

We shall now turn more particularly to the forms of socio-economic organization of agriculture in the LDCs, forms which are the outcome of the changes undergone by primary traditional societies during the colonial period.

## Check test (basic concepts)

| Statements | True | False | Don't know | Subsection |
|---|---|---|---|---|
| 1. The stages of growth defined by W. W. Rostow are the traditional society, the preconditions for take-off, take-off and mass consumption. | | | | 23 |
| 2. In the Marxist approach, law determines production relations. | | | | 24 |
| 3. In traditional agriculture, the production function is written as follows: $Y = Nf(S/N)$. | | | | 28 |
| 4. All traditional economies are subject to structural famine. | | | | 34 |
| 5. The threshold of structural famine is reached when marginal productivity falls below average productivity. | | | | 34 |
| 6. Population is at its optimum level when the marginal productivity of labour is equal to subsistence consumption. | | | | 35 |

## Revision exercises

7. At a point 0 in time, production is 20 and employment is 10; at time $t$, production is 29 and employment is 13. Calculate the average productivities at times 0 and $t$ and the marginal productivity for the period $0t$.

8. In a traditional society, subsistence production rises by 5 per cent a year and population by 3 per cent. By how much can *per capita* consumption increase if the variation in stocks is nil?

9. At what periods of traditional growth are countries with the following growth rates for production $r_Y$ and for subsistence requirements $r_C$ respectively?

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| $r_Y$ | 3 | 3 | 2 | 0 |
| $r_C$ | 2 | 3 | 3 | 3 |

10. The ratio of the relative variation in production to the relative variation in population at a point of the function $Y = f(N)$ is termed the elasticity at that point, i.e.:

$$\lambda = \frac{\frac{dY}{Y}}{\frac{dN}{N}}$$

which can also be written as follows:

$$\frac{dY}{dN}\bigg/\frac{Y}{N}=\frac{\text{marginal productivity}}{\text{average productivity}}.$$

At point $N_a$ in Figure 6, the elasticity is equal to 1. What is the value of the elasticity coefficient (in relation to 1 and 0) at points $N_1$, $N_b$, $N_c$ and $N_f$?

# Topics for group discussion

1. Taking as a basis a traditional society with which you are well acquainted:
    (*a*) Can growth be achieved by a process of extension?
    (*b*) What are the possible means of intensifying agricultural production?
    (*c*) Is there an imbalance between population density and land fertility?
2. Do you know of any experiments conducted to verify the law of diminishing returns? Can you think of any way an exception could be made to the law?
3. Do you know of any situations where cyclical famines occur? How can such situations be explained?
4. Do you know of any situations where cyclical or structural underemployment occurs? What factors are responsible for the underemployment?
5. How can mankind avoid the catastrophe stage? Are we condemned to famine in the long run?
6. Is the traditional society in which you live of the primary or secondary traditional type? What are the main changes that have occurred in this society?

## 2

# *The socio-economic organization of agriculture in the less-developed countries*

**39 Changes in traditional agriculture.** In most countries of the world, primary traditional agriculture has been changed, either directly or indirectly, as a result of European expansion. Primary traditional societies, which are primarily agricultural, have been affected by the six processes of change analysed by Rodolfo Stavenhagen. Two of these processes appear to be particularly important as far as agriculture is concerned.

First, the introduction of new forms of socio-economic organization, usually based on private ownership: as America was conquered at the beginning of the colonial era, the conquerors introduced forms of organization based on slavery (plantations) and serfdom (*haciendas*), and destroyed or transformed the traditional societies existing before colonization. Since European expansion took place much later in other parts of the world, e.g. Asia and Africa, more specifically capitalistic forms of organization were introduced and precolonial forms of traditional agriculture were not completely destroyed.

Second, the development of commercial agriculture, notably for export, resulted from the creation of plantation agriculture based on market-oriented monocultures (tea, coffee, cocoa, sugar cane, etc.) and by the commercialization of pre-colonial traditional agriculture.

We shall examine first the main forms of socio-economic organization of agriculture and then the phenomenon of agricultural commercialization.

## The main forms of socio-economic organization of agriculture

**40 Introduction.** The forms we shall describe here are usually the outcome of the effect Western penetration has had on primary traditional societies. Our descriptions apply to the situation in the mid-twentieth century, but we shall look into more recent developments later. To simplify matters, there can be said to be four basic forms of socio-economic organization of agriculture: customary organization, feudal or semi-feudal agriculture, peasant agriculture and capitalistic or semi-capitalistic agriculture.

These main forms can be broadly described as follows.

Forms of customary organization stem from very ancient beginnings and have been perpetuated by tradition. Custom is composed of a set of rules and patterns of behaviour which govern the life of the group. For example, custom defines the terms on which land tenure is granted, the manner in which the land is cultivated and sometimes the labour conditions. These forms of organization could also be called 'indigenous'; they have usually been modified to a greater or lesser degree by Western penetration.

Feudal or semi-feudal agriculture is characterized by the dominance which the lord, as the owner of the means of production, exercises over serfs or semi-serfs, so that their activities and hence their subsistence depends exclusively or principally on the lord.

Peasant agriculture is essentially characterized by the fact that the initiative for production is left to the individual. In these circumstances dominance, where it exists, is not exercised by direct subordination of the worker but by the market situation in regard to land, production factors (primary inputs) and agricultural products.

Capitalistic or semi-capitalistic agriculture is characterized by specific production relations between the owners of the means of production and the wage-earners, who sell their labour on a market. The structure and mechanisms of the labour market are responsible for the existence of differing situations.

These four basic types do not cover all the wide and complex variety of forms of socio-economic organization, but they seem to offer a good basis for classification. There are also, for instance, public or semi-public forms, consisting of large estates belonging to the State.

**41 Ownership and forms of tenure.** Agricultural economists usually base their analysis of the forms of socio-economic organization of agriculture on ownership and forms of land tenure.

Land ownership may be collective, individual or public.

Traditional collective ownership is to be found in the patriarchal production mode and in community and semi-tribal forms. In certain regions of Latin America, precolonial community forms still exist. Collective ownership can take a variety of forms, some of which are not very clearly defined. The land may belong to the municipality or it may be considered as a national asset over which the community exercises the right of use or else it may belong directly to the community.[1]

In regions where land is plentiful, as in Africa, it is not subject to private appropriation. However, no land is really 'ownerless'; either it belongs to the village or it belongs to the tribe. The concept of private ownership may emerge when indigenous 'planters' develop market-oriented agriculture against the background of a subsistence economy. This process can be seen in regions such as Nigeria, Ghana and the Ivory Coast, where export crops are produced by African planters.[2]

Individual ownership has tended to spread all over the world and to become more concentrated as Western penetration has progressed.

As regards the processes through which they have come about, large landed estates seem to fall into four main types:[3] (a) historical estates, usually resulting from conquests or confiscation; (b) colonial estates, resulting from expropriation and appropriation or else from acquisition; (c) estates formed during the socio-economic development process by the purchase of land from large landowners and small peasants by the urban middle-classes in Europe and America; (d) estates formed by the uneven development of peasant ownership, as a result of low birth-rates, intermarriages and inheritance and/or purchases. This fourth process is relatively unimportant compared with the other three.

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[1] Stavenhagen, op. cit., p. 283.

[2] Stavenhagen, op. cit., p. 183 et seq.

[3] Pierre Georges, *Géographie Rurale*, p. 360, Paris, Presses Universitaires de France, 1963, 360 p.

Small peasant ownership is mainly due to the appropriation by peasant families of land that was originally held in joint ownership, the development of vacant land (settlement by the distribution of small properties) and the sharing-out of individual large properties (agrarian reform involving the breaking-up of large estates).

If the population on a given land stock is growing, individually owned property is broken up by the division of ownership and fragmented by the division of the land into lots among the heirs. Peasant property tends to be broken down into a pattern of minute tracts which are inadequate to sustain a family. This situation may also be the outcome of colonization processes in which indigenous populations are driven back onto restricted belts of inferior land.

Large landed ownership is typical of certain underdeveloped regions. Agrarian reforms over the past ten or twenty years have changed agrarian structures to varying degrees. Some of the situations which existed before these reforms were instituted can best be illustrated by the following figures: in Egypt, some 2,000 owners held one-quarter of the cultivated land; in Mexico, 80 per cent of the land was in the hands of less than 10,000 landlords; in Brazil, half the agricultural land was the property of 30,000 owners each holding more than 1,000 hectares.[1]

Land tenure may take several forms, but the three most important are direct ownership, tenant farming and share-cropping.

In direct land ownership, the initiative for production lies with the owner of the means of production, who works the land directly with the help of his family or wage-earners. In this case, land ownership and land tenure are one and the same thing.

In tenant farming, the owner rents the land to a farmer, who undertakes production on his own initiative but pays the owner a fixed quantity of produce or a sum of money stipulated by contract. In this case, land ownership and land tenure are two distinct attributes. In most rural areas, large landowners and small-scale tenant farmers are the rule, although large-scale tenant farmers and small landowners do exist in some cases.

In share-cropping, the owner provides the land and sometimes part of the working capital, while the share-cropper supplies the labour and the rest of the working capital. Produce is shared between the owner and the share-cropper on terms stipulated by contract or according to custom.

One system which is frequently encountered in many regions, especially in Latin America, establishes close links—usually in the form of a subordination relationship (sometimes of the semi-feudal type)—between large landowners (latifundia) and small peasants (microfundia). The landowner allows the peasant to use a few tracts of land to enable him to produce enough for his subsistence, in exchange for his doing a given number of day's work on the owner's land.

There are many variants of these four fundamental tenure patterns and there are also many landless peasants in the LDCs.

These tenure patterns are related to the over-all socio-economic structure (semi-feudal, capitalist, etc.) and to the historical context. Between the direct tenure of the semi-feudal large landowner and that of the small peasant owner, between Western-style tenant farming and the same form of tenure in Latin

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[1] Georges, op. cit., p. 114–115.

America, there are deep-rooted differences which are primarily due to these differing circumstances. In the ensuing sections, where we consider in greater detail the forms of socio-economic organization outlined above, we have endeavoured as far as possible to take the historical context into account.

### *Forms of customary organization*

**42 Types of organization.** These forms are found in all the LDCs but above all in Africa south of the Sahara. The type of organization involved can be illustrated by the three main forms described below.

First, semi-tribal forms are characterized by customary division of the rights to use land for cultivation and grazing purposes.[1] The customary rules applied in such cases generally ensure that all members of the group are guaranteed a livelihood and that the resources owned by the group are conserved. Access to the land depends, therefore, on tradition, but families or individuals are never owners of the land and the use of land as a marketable asset is excluded.

Western settlement and the commercialization of agriculture tend to alter the semi-tribal system. This type of system sometimes lives on, especially in isolated regions, but a trend towards individual tenure or even appropriation of land can be observed in areas of Western penetration or where agriculture has become highly commercialized.

A second type of organization is the nomadic pastoral forms. In many countries, notably in the Near East and North-West Africa, nomadism plays an important role.[2] There are several forms of nomadism: some groups are completely nomadic in that families and their herds move about as climatic and grazing conditions dictate, while others may have a regular seasonal pattern of migration and be only partly nomadic, combining crop cultivation and animal husbandry.

Nomadism is a form of organization basically dictated by the bioclimatic conditions of the arid and semi-arid regions—conditions which govern the type of animal husbandry practised and the working routes adopted.

Relations between nomads and the other inhabitants of the arid regions are governed by customs. However, the position is being altered by recent changes in the production conditions, the development and irrigation of some areas, etc.

The indigenous communities of Latin America illustrate a third type of organization. These communities are survivals of precolonial forms and still play a relatively important role in Peru, Bolivia, Ecuador, Guatemala and Mexico.[3]

In Peru, some 25 per cent to 35 per cent of the Indian population was still living in communities up to 1966. In the Sierra, there were about 1,400 communities, some of which comprised 20 to 30 families and others more than 1,000 families. The communities have some arable land and pasture in common; the *comuneros* own the land they cultivate, but may not sell it. In some communities, the land is still periodically redistributed among the families, but collective labour with distribution of the harvest no longer exists.[4]

In general, the land/man ration is low, amounting to about one hectare or less. The communities are not entirely subsistence-oriented: part of the production is marketed and in some cases this represents at least 25 per cent of total output.

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[1] FAO, *Provisional Indicative World Plan for Agricultural Development*, op. cit., Vol. 2, p. 401.

[2] FAO, *Provisional Indicative World Plan for Agricultural Development*, op. cit., Vol. 2, p. 403.

[3] Alain Birou, *Forces Paysannes et Politiques Agraires en Amérique Latine*, Paris, Éditions Ouvrières, 1970, 282 p.

[4] Birou, op. cit., p. 57–62.

The Mexican *ejidos* can also be regarded as a form of customary community. The land is owned collectively, families have tenure rights to tracts but the forests and pastureland are exploited in common. There is an 'illegal tendency' to rent out part of the community's land to private farmers.[1]

### *Feudal or semi-feudal agriculture*

**43 Basic features.** Feudal or semi-feudal agriculture grew out of large historical estates which were generally the product of land seizures following conquests or confiscation. The land was sometimes transferred from the historical owners to middle-class families who had acquired riches during socio-economic changes. The structure as a whole is characterized by a small number of economically and politically powerful landowners confronted by a large number of peasants seeking land and employment.

In semi-feudal agriculture, serfdom is legally abolished but as the landowners dispense work and subsistence, they wield considerable power over people in a situation where underemployment is rife. Hence, semi-serfdom may continue to exist, as may feudal attitudes and behaviour patterns.

The large historical estates may be farmed directly; the estate is often administered by a manager who recruits the necessary labour for periods usually corresponding to the specific job of work to be done.

Large properties may also be worked indirectly under an arrangement whereby the land is let to tenant farmers or share-croppers for a given period. Tenant farming may leave the farmer with quite a large measure of initiative and in such cases it has more in common with peasant agriculture. Share-cropping involves peasants in greater subservience to owners and is more akin to the semi-feudal economy.

Hiring-out of the land and control of the farms are often entrusted to an agent or factor. This generally results in worse conditions for the peasants.

The over-all organization of the semi-feudal estate frequently combines direct farming with the granting to peasants of plots of land for their subsistence (microfundia). This system enables large landowners to adjust their labour requirements to their farming systems by making the peasants bear the burden of underemployment while theoretically ensuring their minimum subsistence, and thus to secure a pool of virtually unpaid labour. As a result, there is a geographical contrast between the large estate with its sparse working population and the small surrounding plots which are over-populated and where the labour capacity is underemployed to varying degrees.

Most such large estates have absentee landowners, who take relatively little interest in them. They derive power and prestige from their historical property, and as consumers enjoy the combined advantages of the underdeveloped society (no lack of servants) and of the developed society (importing of luxury goods). They invest relatively little in modernizing their estates and, historically speaking, have tended to build castles, places of worship and tombs.

For want of investment, production remains largely of the extensive type and per hectare yields are low, but the size of the property and the low level of wages provide the landowners with large incomes.

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[1] FAO, *Provisional Indicative World Plan for Agricultural Development*, op. cit.

The productivity of labour may be quite high, but this productivity is not meaningful inasmuch as the large estate adjusts its labour requirements to its production system and imposes the burden of underemployment on the surrounding subsistence holdings.

The semi-feudal system results in the under-utilization of land and the underemployment of manpower, both of which have often been condemned by economists and sociologists. Besides being socially inacceptable, therefore, the feudal system is unsuited to development. The behaviour of the great landowners has probably changed to some degree in recent times, but the system generally calls for urgent reform.

**44 Historical survivals.** A semi-feudal system which can be explained by historical processes lives on in certain regions of the world. This system is quite important in Latin America, owing to the continent's early colonization, but it is also encountered in Asia, Africa and the Near East.[1] However, since the African countries and many others in the world were colonized at a period when Western capitalism was at its peak, colonization usually took a semi-capitalist form. Moreover, the feudal system can only really survive in regions that are densely populated, where there is no vacant land, where non-agricultural activities develop at a rather slow pace, where the possibilities for migration are limited and where there is considerable underemployment. In such circumstances, the landowner becomes virtually the only source of employment and can in practice exercise considerable power over people.

In Latin America, the main forms of 'latifundia' which appear to present the features of the semi-feudal system are as follows:[2]

The *latifundio señoril*, a virtually unaltered relic of the old colonial agrarian structures.

The traditional *hacienda ganadera*, an estate given over to the extensive rearing of cattle, especially of beef cattle, where the range area per head may be as much as five hectares. The traditional *hacienda ganadera* still exists in the altiplano along the Cordillera of the Andes in Peru, Ecuador and Colombia, in the plains of Colombia and Venezuela, in the central and north-eastern part of Brazil and in the Chaco region of Paraguay.[3]

The plantation *hacienda*, or *fazenda* as it is known in Brazil. This owes its origins to slave labour. 'The *asentamiento* (or rural establishment) includes the hacienda proper, the land granted to settlers and the land which the hacienda workers may own.'[4]

Minifundia and latifundia together form a structural system whose basic features have been concisely summarized by Antonio García:

> The concentration represented by latifundia and the fragmentation represented by minifundia are the obverse and reverse of one and the same coin: many people have very little land because a few people have a great deal of land. Hence, it is no accident that the latifundio and the minifundio exist side by side. There is a causal dependency and symbiosis, for the minifundio is a product or functional component of the latifundist structure. Monopoly of the land is the cornerstone of that structure.[5]

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1. FAO, *Provisional Indicative World Plan for Agricultural Development*, op. cit., Vol. 2, p. 405.
2. Birou, op. cit., p. 29–41.
3. Birou, op. cit., p. 38.
4. Birou, op. cit., p. 41.
5. Antonio García, 'Proyección Social de las Reformas Agrarias', *Revista Mexicana de Sociología*, Vol. 67, No. 4, p. 711 (quoted by Birou, op. cit., p. 47).

It is true that these traditional forms of organization are capable of some evolution. They tend to become capitalized and semi-feudal relations are superseded by employer–worker relations based on contracts. But, as Birou notes, the striking fact is that feudal attitudes continue to exist in relations between landowners and peasants and in the value system and social hierarchy based on land ownership.

### *Peasant agriculture*

**45 Basic features.** The basic feature of peasant agriculture is the fact that the initiative for production is left to the peasant. In reference to the Western development model, peasant agriculture could be termed a 'craft'. In this model, the craftsman is defined as a man who is legally free and who works with his own means of production. Craft-based agriculture in this context is identified with family agriculture. The family is at one and the same time a unit of inheritance, of production, of income and of consumption. The family usually owns the land, unless it is the tenant, and it supplies the greater part of the labour needed for producton.

Production is directed both towards the direct satisfaction of the needs of the family living on the farm (subsistence production) and towards sales on the market (commercial production). By selling its produce, the family obtains the money to enable it to purchase the goods it needs for the farm and household. The head of the farm is also the head of the family and decisions affecting the family and the farm are closely linked.

Craft-based agriculture grew up in the West during the nineteenth century: from then to the present day, it has formed the core of the agricultural infrastructure on which Western development has been built.

Peasant agriculture exhibits several sociological models of either the family or multi-family type and several technological models involving traditional or progressive agriculture.

The technological and economic model of traditional peasant agriculture is chiefly characterized by the exclusive use of biological energy (essentially human, the use of draught animals being in many cases a recent innovation), the predominance of unspecialized labour, sometimes accompanied by an elementary division of labour (e.g. the distinction between herdsmen and tillers of the soil and the allocation of certain tasks according to sex), slight or very slight use of technology[1] and often scarcely any integration into the economy as a whole (if subsistence agriculture still prevails).

Long experience has given peasants considerable practical knowledge of their environment, but this is usually tainted with sundry beliefs and taboos and with fidelity to traditions and ancestors. Agricultural activity often remains associated with magical or religious rites. Finding it impossible to dominate Nature, man throws himself on its mercy.

Developments in recent years have nevertheless shown the ability of peasants at the secondary traditional stage to accept new forms of agriculture: literacy training, the development of information media, the organization of distribution circuits and so on have had a marked impact on the development of peasant agriculture.

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[1] Of 350 million families engaged in agriculture, 250 million or 70 per cent possess no other implements than hand-hoes and wooden ploughs that scarcely differ from those on Egyptian and Babylonian bas-reliefs. (See F. Baade, *La Course à l'An 2000*, p. 23 et seq., Paris, Presses Universitaires de France, 1963.)

**46 Sociological models.** Peasant agriculture is found in both the DCs and the LDCs, especially in Asia.[1] Depending on the level of development, the models usually differ in the manner and extent to which peasants are dominated and in the degree to which their farming can be considered traditional or progressive. In several Asian countries (Pakistan, India, Sri Lanka, the Philippines, Thailand, Malaysia and Indonesia), the owners of the means of production, money-lenders and traders are usually in a position to exercise considerable power over the peasants.

In many LDCs, the concept of the family is broader than that commonly found in Western countries. The extended family often embraces cousins, uncles and distant relatives. Property and income are pooled within this type of family. The extended family is widespread in Africa and Asia: the social standing of the family is bound up with the number of its members and the number of servants. The extended family is often associated with traditional agricultural societies. Its purpose may be to create a system for the protection of a group of people linked by blood ties, to avoid division of the land or to facilitate certain agricultural activities.

The family holding, where the land belongs or is rented to the farmers, represents a substantial proportion of the total number of farms in many countries but often quite a low proportion of the cultivated area.

In Latin America, the surveys conducted by the Inter-American Committee for Agricultural Development (CIDA) give some idea of the importance of this type of holding. CIDA distinguishes between the 'sub-family' holding which is not large enough to provide full employment and an adequate standard of living for a peasant family with a labour capacity of two men per year (minifundio), and the 'family holding', with sufficient land to satisfy the needs of a peasant family and provide full employment for two to four people per year. Table 10 shows that in number, family holdings are the most prevalent, but that they nevertheless represent a low proportion of the total area farmed in each country. The number of sub-family holdings is particularly large in Ecuador, Guatemala and Peru.

In reality, as we have already mentioned, the minifundia are often a direct offshoot of the latifundia system. This is true of the share-croppers, who are granted tenure of small plots of land in exchange for their providing a certain number of days' work on the landowner's *hacienda*. The peasant is less dependent if he owns his minifundio, but dependence still exists as long as he has to do a certain number of days' work on the local large estate in order to make enough to live.

Some minifundia specialize in market crops—those near urban centres may grow horticultural produce, for instance—or consist of small plantations of coffee, tobacco, sugar cane and so on.[2]

It can be seen from Table 10 that in Argentina and Colombia family holdings form a considerable proportion of the whole, both in numbers and above all in surface area. These holdings may make use of varying numbers of wage-earners (low wage levels).

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[1] FAO, *Provisional Indicative World Plan for Agricultural Development*, op. cit., Vol. 2, p. 407.

[2] Birou (op. cit., p. 45) cites in particular the Tucumán district in Argentina, where there are 8,400 minifundia covering an area of 23,000 hectares and 100 latifundia covering nearly 540,000 hectares.

TABLE 10. Place occupied by the different categories of holdings in Latin America in 1962–63 (N = percentage of total number; S = percentage of total area farmed)

| Country | | Holdings | | | | Total |
|---|---|---|---|---|---|---|
| | | Sub-family | Family | Medium | Large | |
| Argentina | N | 43.2 | 48.7 | 7.3 | 0.8 | 100.0 |
| | S | 3.4 | 44.7 | 15.0 | 36.9 | 100.0 |
| Brazil | N | 22.5 | 39.1 | 33.7 | 4.7 | 100.0 |
| | S | 0.5 | 6.0 | 34.0 | 59.5 | 100.0 |
| Chile | N | 36.9 | 40.0 | 16.2 | 6.9 | 100.0 |
| | S | 0.2 | 7.1 | 11.4 | 81.3 | 100.0 |
| Colombia | N | 64.0 | 30.2 | 4.5 | 1.3 | 100.0 |
| | S | 4.9 | 22.3 | 23.3 | 49.5 | 100.0 |
| Ecuador | N | 89.9 | 8.0 | 1.7 | 0.4 | 100.0 |
| | S | 16.6 | 19.0 | 19.3 | 45.1 | 100.0 |
| Guatemala | N | 88.4 | 9.5 | 2.0 | 0.1 | 100.0 |
| | S | 14.3 | 13.4 | 31.5 | 40.8 | 100.0 |
| Peru | N | 88.0 | 8.5 | 2.4 | 1.1 | 100.0 |
| | S | 7.4 | 4.5 | 5.7 | 82.4 | 100.0 |

*Source:* CIDA, in Alain Birou, *Forces Paysannes et Politiques Agraires en Amérique Latine*, p. 32, Paris, Éditions Ouvrières, 1970, 282 p.

*Note.* Sub-family holdings are holdings with insufficient land to meet the needs of a family and to provide it with full employment throughout the year. They predominate in number in several countries, but occupy a very small area.

Large holdings with a land area providing work for more than twelve man-years are few in number, but represent a very large proportion of the area, thereby showing how land is concentrated to the advantage of a small number of people.

Family and medium holdings are quite important in both number and area in Argentina, Brazil and Colombia.

According to CIDA, the average multi-family holding is one needing the labour of four to twelve people a year. This type of holding is relatively important in Brazil, Colombia and Guatemala. The group as a whole is heterogeneous and difficult to interpret for statistical purposes. It may include large family holdings employing a few wage-earners but it may also include mechanized and modernized *haciendas* with forms more similar to those of capitalistic agriculture.

Family holdings which grow to a size where production exceeds consumption, and are therefore in a position to produce a food surplus, can play an important part in the development process.

This type of holding is comparatively important in some parts of Africa. Stavenhagen mentions that everywhere in Black Africa, but especially in West Africa, the development of export crops has given birth to a new class of peasant, the planter.[1] This type of peasant is the product of the secondary traditional society. The African planter continues to grow some food crops, but he tends to develop an export crop such as groundnuts, cocoa, coffee and so on. He is therefore integrated into the money economy to some degree, sells his produce to purchase the goods needed for his plantation and home, employs an increasing number of wage-earners and intensifies his production. As a result, the traditional structures of the extended family and the status of the land tend to change. Old forms of ownership die out and private ownership becomes established.

[1] Stavenhagen, op. cit., p. 173.

Lamartine Yates considers that under the stimulus of international trade market-oriented peasant holdings are coming into being in some countries in both Africa (Ghana, Nigeria, Uganda, etc.) and Asia (Burma, Thailand). The value of the rice exported by the peasants of Burma and Thailand, compared with what it was in 1870, had multiplied by ten or thirteen times in 1913 and as much as twenty times in the 1920s.[1] By contrast, exports from the peasant sector in Latin America are slight or non-existent.

The fundamental problem of the commercialization of peasant agriculture will be examined with the care it deserves in a separate subsection.

**47 Peasant agriculture and the phenomenon of domination.** In the conditions prevailing in the LDCs, peasant agriculture is often subject to the domination of three classes of people: landowners, traders and money-lenders.

The domination of landowners may be particularly marked in areas of high population density and underemployment. In such cases, the landowner is the dispenser of both land and employment. In instances where the peasants own the land they farm, the effects of such domination may be softened, although they will not be completely eliminated if the peasant holding is not large enough to meet family needs and if additional employment has to be sought on a local large estate.

In the case of share-cropping, subordination is very real, while in the case of rented land the owner can still exercise domination because of his function as a distributor of land. If the demand for land is high in relation to population pressure, land rents are very high and furthermore the owner may resort to discriminatory practices and compel the peasant to submit. In a society where there is underemployment, the fate of landless peasant families is wretched. The domination of landowners may also be expressed through political channels, in the laws and regulations governing the production relations of the peasant society. The degree of domination is not measured solely by the high level of farm rents ([illegible] as much as 50 per cent of output), but by various pressures which result [illegible] submission and humiliation.

The domination of traders may be exerted in several ways: through the actual trading mechanism, i.e. the exchange of imported goods for local produce; through the market structure, generally of the oligopsonic type (i.e. a small number of well-informed buyers dealing with a large number of uneducated and uninformed sellers), which makes for a wide range of prices based on a personal assessment of the customer; through the lack of a material infrastructure for storage and processing purposes; through indebtedness (purchase of the crop before it is harvested); and through lack of peasant organization.

Domination by money-lenders is bound up with peasant indebtedness. Loans in the LDCs are very often consumer loans which are very difficult to repay because of the very high rate of interest, sometimes amounting to as much as 80 per cent to 100 per cent. Indebtedness thus becomes a permanent instrument of domination which involves the peasant in a state of submission to and dependence on landowners, traders granting credit and money-lenders.

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[1] H. Myint, *The Economics of Developing Countries*, p. 39, London, Hutchinson, 1964, 192 p.

### *Capitalistic agriculture*

48 **Background.** Capitalistic agriculture is characterized by the production relations specific to capitalism, as between the owners of the means of production and the wage-earners offering their labour on a market. Various types of situations exist, depending on the structure and mechanisms of the labour market.

In the LDCs, capitalistic agriculture is usually of the plantation type, but this speculative type of agriculture has sometimes taken other forms. Plantation agriculture is normally taken to mean the large-scale cultivation of tropical shrub and tree crops such as coffee, cocoa, rubber, bananas, palm oil and coconuts for exports.[1]

Historically, plantation agriculture was the outcome of the expansion of the European economy from the sixteenth century onwards. The first forms of plantation agriculture were based on the labour of African slaves who were chiefly transported to Latin America[2] and to the southern United States. The first plantations tended to specialize in sugar-cane and cotton. After the abolition of slavery, the plantation economy took on a semi-feudal form. The plantation *hacienda* or *fazenda* (in Brazil), with its origins in slavery, is a relic of this form which lives on in Latin America. These *haciendas* have been modernized to varying degrees. 'The most typical are the plantations of coffee in Brazil, cotton and sugar-cane on the coast of Peru, cotton, tobacco and rice in Colombia, coffee in Central America and cotton in Mexico.'[3] In line with the process of historical development, plantations are moving towards capitalist forms: in principle, workers are hired on a contract basis and receive a definite wage.

The capitalistic forms of plantation agriculture developed with the capitalist expansion of the nineteenth century. However, the capitalistic forms grafted onto the traditional societies are not comparable with the forms found in Western capitalism. Fundamental differences were generated by a different historical context and differing stages of development. In the LDCs, the relatively low standard of living, underemployment, the lack of organized labour or of advanced legislation for the protection of labour, etc., foster the existence of a high degree of domination of workers by the companies employing them and historical tradition ensures the survival of semi-feudal attitudes. Hence it might be more appropriate to call this system a semi-capitalistic economy.

Forms of neo-colonial plantation agriculture of a capitalist character are found in Latin America: the most famous of the companies practising this form of agriculture is the United Fruit Co., which produces chiefly bananas, but also coffee, cocoa and sugar. In Liberia, the Firestone Company has established extensive rubber plantations controlling 43,000 hectares and employing 20,000 people. The plantations economy has been developed in South-East Asia, in Indonesia and Malaysia. In Sri Lanka, the tea and rubber plantations are respectively 50 per cent and 80 per cent foreign-owned. They occupy two-thirds of the cultivated area, employ 25 per cent of the wage-earning labour force and provide 95 per cent of exports.[4]

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1. R. Badouin, *Agriculture et Accession au Développement*, Paris, A. Pédone, 1967, 228 p.
2. 'All along the Atlantic coast of Latin America, from La Plata to the Caribbean, African racial and cultural influences are pronounced. Indians, Europeans and Africans are the three main elements of the Latin American populations.'—R. Stavenhagen, op. cit., p. 111.
3. Birou, op. cit., p. 39.
4. Badouin, op. cit., p. 92 et seq.

Capitalist penetration in the agricultural economy of the LDCs has not only taken the form of plantations, but can also be seen in the form of commercial capitalism, which is often linked with production capitalism. Commercial firms formed by leading companies collect the 'colonial produce'—groundnuts in Senegal, cocoa in Ghana and so on—and also sometimes act as middlemen, buying and marketing the bush traders'agricultural produce and at the same time selling them imported products. Traders also act as bankers, and peasants in debt often fall under their domination. The development of this system eventually results in nothing less than the swallowing-up of the peasant sector by the big capitalist firms which provide the means of production and purchase the agricultural produce.

Capitalistic agriculture in the LDCs is not confined to the plantation economy: recent years have seen the development of a mechanized agriculture, using wage-earning labour and working for the domestic market, the export market, or both.

**49 Basic features of the semi-capitalistic economy.** The purpose of this type of economy is to seek profit by cultivating commercial crops. The initiative for production lies with the owners of the means of production, often companies. The labour is supplied by wage-earners.

The technological and economic model is often that of a semi-industrial agriculture which is relatively progressive (research institutes working for plantation agriculture), combines mechanical and biological energy, having regard to factors of cost and convenience of use, and sometimes makes fairly high capital investments per unit of labour.

The large capitalist firms are diversified both economically and geographically but the establishments or technical units composing them are specialized (plantations for tea, coffee, sugar-cane, etc.) and thus permit some specialization of labour. Semi-industrial agriculture stems from mass production and it manages to obtain quite high labour productivity by using advanced technology and diverting underemployment to the traditional agriculture of the surrounding area (employment of temporary workers).

Semi-capitalistic agriculture, spurred on by the profit motive, has given rise to abuse as a result of the practice of over-intensive farming which causes exhaustion of the soil and its destruction by erosion. Introduced into a semi-traditional environment, it creates a dualism which has technological, economic and social features. In some cases, by taking over large tracts of land, it competes with the subsistence economy. It creates employment and income but, if it has been developed by expatriates, part of the income is transferred to the country from which the capital originated. It is true that it introduces new technological models, but these models cannot be transferred wholesale into an environment in which traditional structures predominate. By contrast, commercial capitalism can stimulate the development of market-oriented peasant agriculture and thus contribute to the inner transformation of traditional agriculture.

### *Landless peasants*

**50 The large number of landless peasants in the LDCs.** A fundamental aspect of the agricultural problem in the LDCs is the existence of peasants who have neither land nor permanent employment. Birou estimates that, in the period from 1950 to 1960, 'for the whole of Latin America, some 55 to 65% of the working agricultural population is obliged to take part- or full-time wage-earning employment '.[1]

Birou places these part-time or full-time wage-earners in three categories: part-time workers (minifundia) on traditional *haciendas*, with a very low standard of living and a highly precarious situation; workers in semi-capitalistic firms, with differing conditions of employment; and workers who have migrated temporarily or permanently and increase the size of the urban or rural proletariat.

Stavenhagen attaches particular importance to the migrant worker as the product of the transformation of traditional structures. There are two basic migratory currents: that towards urban and mining centres and that towards regions where commercial agriculture is on the increase.

These migrations may be temporary in character, as is the case in areas where activity is seasonal: migrants may be absent from home for six to seven months. For example, it has been estimated that 150,000 to 300,000 migrant workers come to the Ivory Coast from other countries during the cocoa season. In Africa, many workers travel long distances, often on foot, looking for seasonal work.[2]

These few comments on landless peasants clearly show that the problem of development is not only that of reforming agrarian structures. It will also be necessary to create structures for integrating landless peasants.

### *Over-all structure of agriculture*

51 **The variety of agriculture.** In the course of history, differing socio-economic structures have grown up on the basis of traditional growth and of the establishment of societies corresponding to the stages of such growth. These structures were subsequently affected by capitalist penetration which in various ways transformed the 'primary' traditional societies. Agriculture in the LDCs is not a homogeneous whole any more than it is in the DCs: as F. Perroux has said, it is made up of different periods and styles.

Its variety is born of the historical and geographical context. Agriculture is composed of several modes of production (or subsectors)—principally customary, semi-feudal, peasant and semi-capitalistic. The dominant subsector qualifies the whole. However, it should be borne in mind that, globally speaking, the dominant system for the world as a whole is the capitalist system, which determines certain types of relations throughout the world.

The facts of the agrarian world cannot, however, be reduced to four 'morphologically pure' basic modes. More variety and finer distinctions are to be found. In view of the complexity of agrarian systems and of the forms of socio-economic organization, over-general classifications are too limited in scope. The facts can only be grasped from specialist surveys carried out in a given setting. However, the chances are that we shall not be able to see the wood for the trees and that concentration on detail will blind us to the main forces at work.

As a general rule, we do not have sufficient statistical data to depict the relative importance of the subsectors within the agricultural economy. Table 10 shows the predominance of the latifundia in area and of the small family holdings in number. But this table is far too general to reflect the socio-economic structure of Latin American agriculture. The different modes of production do not merely

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1. Birou, op. cit., p. 156 et seq.
2. Stavenhagen, op. cit., p. 158.

exist side by side nor do they usually compete with each other. The relations between them are rather those of opposing forces and, as we have seen in Latin America, the relations between latifundia and minifundia are very often relations of domination.

## Commercialization of agriculture

**52 Subsistence agriculture.** This expression is ambiguous and has to be made more specific. It may refer to the standard of living, to the destination of the final product or to the role of consumption by producers themselves in relation to food consumption as a whole.

The subsistence standard of living is that standard providing the minimum needed to sustain life and the activities following on from it. 'Subsistence agriculture' could mean, therefore, that agricultural activity enables the peasant and his family to produce just enough to ensure the vital minimum in a traditional society.

Subsistence agriculture may mean that agricultural production is wholly or chiefly intended to satisfy the requirements of the agricultural population. Agriculture is exclusively devoted to subsistence if the entire output is consumed by the producers; it is partially subsistence agriculture if some of the output is sold. It can be agreed that subsistence agriculture predominates if more than 50 per cent of the output is intended for the needs of the agricultural population.

TABLE 11. Estimates of imputed value of subsistence production as percentage of total value of agricultural production

| Country | 1950–54 | 1960–63 |
|---|---|---|
| *National averages* | | |
| United Kingdom | 1 | 1 |
| United States | 6 | 3 |
| Canada | 8 | 5 |
| France | 19 | 14 |
| Japan | 32 | 21 |
| Zambia | 75 | 70 |
| Malawi | 67 | 62 |
| Kenya | 62 | 54 |
| *African farmers only* | | |
| Zambia | 90 | 90 |
| Malawi | 84 | 81 |
| Southern Rhodesia | 76 | 69 |

*Source:* K. C. Abercrombie, 'Subsistence Production and Economic Development', *Monthly Bulletin of Agricultural Economics and Statistics, FAO* Vol. 14, No. 5, May 1965.

*Note.* The author considers that '. . . in most of the countries of Africa, as well as in the continent considered as a whole, subsistence production accounted for more than half of the total value of production'. The country average provides only a rough approximation: subsistence production is heavily predominant for African farmers. In India, subsistence production represents respectively 63 per cent for wheat, 69 per cent for rice, 76 per cent for maize, etc, (p. 3).

The relative importance of subsistence agriculture declines as development proceeds: this trend can be corroborated from the above table by comparing the figures for countries at different stages of development and for individual countries as between 1950–54 and 1960–63.

TABLE 12. Estimates of imputed value of subsistence production as percentage of total food expenditure of agricultural population

| Country | Period | Percentage |
|---|---|---|
| Mali (Office du Niger) | 1963 | 82 |
| Senegal: Senegal Valley | 1963 | 72 |
| Ivory Coast (Bongouanou) | 1955–56 | 71 |
| Austria | 1962 | 62 |
| Japan | 1963 | 50 |
| France | 1958 | 46 |
| United States | 1955 | 40 |

*Source:* K.C. Abercrombie, 'Subsistence Production and Economic Development', *Monthly Bulletin of Agricultural Economics and Statistics, FAO* Vol. 14, No. 5, May 1965, Table 2, p. 4.

*Note.* The data are taken from food consumption surveys: as a rule, subsistence production expressed as a percentage of food consumption is much higher than if expressed as a percentage of total agricultural output. The percentage decreases with the development process, but continues to remain high, even in developed countries. In the United States, subsistence production, which accounted for only 6 per cent of total agricultural production, still represents 40 per cent of the food consumption of agricultural households.

Table 11 shows that the estimated value of subsistence production as a percentage of total production is bound up with the development process. In the LDCs, up to two-thirds or three-quarters of some food crops are consumed by the producers themselves. The relative importance of subsistence production also depends on the different forms of socio-economic organization of agriculture. It is low or non-existent in capitalistic agriculture but its importance in peasant agriculture is considerable, especially if the land available is slight and the family is large.

Subsistence produce is that intended for consumption by the producers. It mostly consists of food, but may also include fibres and timber. Subsistence production is often combined with gathering, hunting and fishing to ensure sustenance.

Life in a subsistence economy means that producer-consumed products are the exclusive or principal source of consumption. Table 12 shows that self-subsistence diminishes with the development process but that it may still be a relatively major factor.

Henceforward, we shall use the term 'subsistence agriculture' to mean agriculture in which at least 50 per cent of production is intended for the consumption of the agricultural population.

**53 Historical models and geographical models.** Subsistence agriculture is the standard form of agriculture in traditional societies. However, whenever there are non-agricultural classes which do not produce their own food, transfers of foodstuffs from producers to non-producing consumers have to be organized. Table 13 throws some light on the scale of these transfers.

TABLE 13. Distribution of population by categories (percentages)

| Agricultural population | Non-agricultural population | Ratio of non-agricultural to agricultural inhabitants | Number of people fed per agricultural inhabitant |
|---|---|---|---|
| 80 | 20 | 0.25 | 1.25 |
| 60 | 40 | 0.66 | 1.66 |
| 50 | 50 | 1 | 2 |

If the agricultural population represents 80 per cent of the total, the ratio of non-agricultural to agricultural inhabitants is 1 : 4 (0.25), which means that every four agricultural inhabitants have to leave over sufficient food for one non-agricultural inhabitant. Assuming parity of food supply, 25 per cent of the production should be transferred. But the town-dweller is usually much better fed than the country-dweller and the proportion of production transferred may be more than 30 per cent. Once the agricultural population accounts for only 50 per cent of the total population, we can be sure that more than 50 per cent of production is transferred.

Transfers may originate in voluntary acts such as tributes to gods, to chiefs or to people who possess material or spiritual power, or they may arise from the forces at work within the society. In the semi-feudal system, for example, transfers are organized by instituting systems of part-time labour on the lord's estate (*corvées* or forced labour) or of crop-sharing. Transfers may also take place through barter.

In regions where urban economies expanded at a very early stage, the transfer of agricultural produce and market-oriented agriculture rapidly assumed considerable importance, e.g. in the Mediterranean basin from the time of antiquity.

In Latin America, the Spanish and Portuguese type of colonization was based on a chain of urban nuclei which formed the framework for political power and administrative organization, and on the existence of a social class 'linked to the central power by bonds of personal loyalty' and furnished, by the central power, with land and indigenous labour.[1] The whole structure was therefore based on a vast system whereby part of the indigenous food production was transferred for the benefit of the colonial system.

The various technological and economic models of subsistence agriculture may differ to a greater or lesser degree, but they nevertheless all have basic features in common.

Traditional subsistence agriculture is characterized by an economy based on biological energy (it approximates to natural conditions) in which the producers basically supply their own needs and consume their own produce. It centres on a number of staple food plants (such as rice in Asia, maize in Latin America, millet and other cereals and yams and manioc in Africa). Labour productivity is low and unpredictable. In short, the subsistence economy is an economy of poverty. The rate at which the population grows in relation to production can give rise to cyclical famines or may even cause structural famines, as a result of both population growth and soil deterioration. Traditional subsistence agriculture has all the features of a backward economy, typical of a situation of underdevelopment.

**54 Commercialization of agriculture.** Table 13 illustrates one of the first processes in the commercialization of agriculture, that resulting from the internal transfer of the agricultural population to other activities. As the socio-economic fabric develops, forced transfers of foodstuffs are gradually replaced by transfers dictated by market forces. For example, the smallholders of Western Europe proved capable of voluntarily supplying the market with sufficient foodstuffs to satisfy the needs of the growing non-agricultural population, eliminate famine, considerably improve the nutritional level of European populations and keep pace with population growth.

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[1] Celso Furtado, *Développement et Sous-développement*, Paris, Presses Universitaires de France, 1966, 226 p.

It is true, however, that these results were obtained in a situation where population growth was low and there were net transfers of foodstuffs from the LDCs.

In traditional societies with a low developmental potential, the transfer of the agricultural population takes place slowly, as non-agricultural activities (industry and trade) are also established very slowly and living standards tend to mark time. In such circumstances, high demographic growth causes a growth in subsistence agriculture.

Western penetration has made it easier for market-oriented agriculture to develop in primary traditional societies. Care has to be taken, however, to distinguish between plantation agriculture, which was organized with a view to exports, and the transformation of traditional subsistence agriculture as part of the over-all pattern of transformation undergone by traditional societies. In what follows we shall be dealing with this second aspect only.

**55 The growth of peasant exports** H. Myint has devoted particular attention to describing this process[1] and gives three reasons for doing so: because it is an instrument for changing the traditional subsistence economy, because it offers the agricultural population more scope for employment and a wider choice between agricultural and non-agricultural employment, and because in certain countries it represents a spectacular phenomenon. Thus, the value of peasant rice exports in Burma and Thailand increased by about twenty times between the latter part of the nineteenth century and the early twentieth century. In the period from 1913–35, Nigeria's exports of oil and oil seeds rose six times and Ghana's cocoa exports thirteen times.[2]

Furthermore, this growth was usually obtained by self-financing and, therefore, in contrast with the mining and plantation sectors, owed nothing to foreign capital.

This process was made possible by the establishment of import–export companies and the creation or improvement of communications and transport facilities. These two conditions were, in fact, necessary to create effective demand. In addition, three conditions were needed to develop export crops: the possibility of producing a surplus (and hence of exceeding the minimum subsistence level), the exsitence of a plentiful supply of land[3] and underemployment of the labour force.

Myint identifies two phases in the development of a market-oriented agricultural economy. In the first phase, commercial agriculture is developed on the foundations of a subsistence economy: export crops exist side by side with food crops. In the second phase, the peasant exporters begin to specialize, reduce the size of their subsistence food crops and instead buy foodstuffs and other goods. Hence the part played by 'own produce' in the cost of food is reduced and the agricultural households themselves 'turn commercial'.

Myint considers that the peasant economies of Africa—with the notable exception of Ghana—are still in the first phase of the growth of the money economy. 'The second phase in the growth of the money economy is represented by

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1. Myint, op. cit., Chapter III, p. 38–52.
2. Myint, op. cit., p. 39.
3. 'It was no accident that all the Asian and African countries which were to develop into important peasant export economies started before the expansion of trade with relatively sparse population and abundant supply of "semi-empty" hinterland.'—Myint, op. cit., p. 42.

the more developed peasant export economies, such as Burma, Thailand and Ghana.[1]

When countries pass to the second phase of the money economy, they become very dependent on the international market and on the structures of that market.

> In most peasant export economies, the middlemen, after a long chain of intermediaries, culminate in a few large export-import firms, each buying a large proportion of the total output of the peasants. At this stage, therefore, there is a real danger that a few foreign-owned firms would combine to exercise monopoly power over the peasants and shift on to them the main impact of the fall in the world market price for the export product.[2]

Inexperienced and unorganized, peasants who have specialized become particularly vulnerable when confronted with price fluctuations, and tend to get into debt and surrender their land, in cases where they are owners, in order to repay their debts. It is natural, therefore, that when countries become independent, measures are taken in an attempt to stabilize prices and to protect peasant economies: Burma and Ghana for instance adopted the marketing board system for exports and Burma had no hesitation in nationalizing foreign export-import firms.[3]

While some peasant agricultural systems have reached the stage of producing for export, there are large LDCs such as India and Pakistan which, although open to outside economic forces, still have large, slow-moving subsistence sectors. Myint believes that the explanation is to be found in rural overpopulation and in the inability of peasants to produce a food surplus. 'To try to explain this entirely in terms of the "conservatism" of their peasants and social rigidities is not convincing since these factors also operate in other peasant societies where export production and the money economy have expanded at a much faster rate.'[4]

**56 Historico-geographical models.** The process whereby peasant agriculture is commercialized, of which Myint offered us a remarkable conspectus, has taken various forms, some of them less advanced than others. This seems to be the case in the over-populated countries of Asia, but also in Africa and Latin America.

In Africa, as we have mentioned, 'peasant-planters' are the product of colonization. This situation is the outcome of money taxation, systems of pressure-wielding or coercion and the role of the large companies.

In Latin America, the process of farming development is based more on plantations and semi-capitalistic agriculture. As a result, competition has grown up between the semi-feudal system and the semi-capitalistic system, as described by Celso Furtado. The integration of the Latin American economy into the world market in the second half of the nineteenth century gave rise to new forms for the organization of production. The export sector was organized on a semi-capitalistic basis. In some instances, firms were set up on virgin land, this being the case for the main Brazilian crops of coffee, cocoa and rubber.[5] In order to recruit the workers needed, the wage rate had to be fixed at a level higher than the 'incomes' of the pre-capitalistic sector, which formed the labour pool. Celso Furtado mentions that in cases where the pre-capitalistic sector made it possible

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1. Myint, op. cit., p. 49.
2. Myint, op. cit., p. 48.
3. Myint, op. cit., p. 50.
4. Myint, op. cit., p. 46.
5. Furtado, op. cit., p. 198.

to attain quite high living standards, for instance in the small peasant holdings in fertile areas in Paraguay, the capitalistic sector found it difficult to expand.

The progress of the semi-capitalistic sector ought to have led to the absorption of the pre-capitalistic sector. But this has not happened. In Latin America as elsewhere, capitalistic forms exist side by side with other forms and the agricultural sector is heterogeneous.

Except in a few regions, peasant agriculture does not seem to have played a very important part in the expansion of Latin American exports. Moreover, the indigenous communities, especially in the Andes, seem to remain outside the process of change brought about by the commercialization of agriculture. According to Stavenhagen, this is not really the case:[1] the relations of the communities with the outside world, even if they are not very important from the quantitative standpoint, are highly significant in terms of quality, reinforcing as they do the Indian's state of dependence. Moreover, 'The trade of the regional centre is organized in such a way that the Indian always leaves behind there his meagre income'.[2]

**57 Transformation of traditional agriculture: secondary traditional agricultural societies.** The existence of market outlets. created by the organization of exports at Western instigation, has been an incentive in some regions and has ended in peasant exporters being confined in a money economy system. The transformation of traditional agriculture by the commercialization process can only be understood if the 'agricultural' transformation is situated in the context of the over-all transformation of traditional societies. If we refer again to the six fundamental processes of change in these societies as outlined by Stavenhagen, it is possible to single out those which are most likely to have affected the commercialization of agriculture. These are: the creation of money taxation, the development of non-agricultural activities in traditional societies and the introduction of new forms of socio-economic organization of agriculture (plantations) expanding the urban and rural labour market. We should add the role of commercial capitalism which puts tempting goods in the way of traditional populations.

In addition to the commercialization of traditional agricultural societies from the outside, commercialization occurs through the domestic market. This may take a variety of forms. Internal population transfers from the country side to the town, sometimes bringing with them an increase in *per capita* income, create growth in the over-all food demand. As a result, food crops to supply non-agricultural populations have to be increased.

Peasants may also seek additional income as temporary wage-earners. If the money income available per farmer increases, farmers become customers of industry, and in countries where agriculture is spearheading development it is possible that the take-off process may be triggered off.

Obviously, this process of commercialization by external and internal factors tends to bring about many changes in the status of the family and land, as well as in living habits and mental attitudes. As they are affected by the different forms of Western penetration and its consequences, primary agricultural societies reach a new stage: they become secondary traditional agricultural societies.

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1. Stavenhagen, op. cit., p. 299.
2. Stavenhagen, op. cit., p. 303.

80

## Check test (basic concepts)

| Statements | True | False | Don't know | Subsection |
|---|---|---|---|---|
| 1. The modes of land tenure comprise the feudal, peasant and capitalistic systems. | | | | 40 |
| 2. Semi-feudal agriculture is defined by the legal status of the peasant owing submission to the lord. | | | | 43 |
| 3. In 'peasant' agriculture, the initiative for production lies with the peasant. | | | | 45 |
| 4. Craft-based agriculture is basically characterized by production relations of a family type. | | | | 43 |
| 5. Capitalistic agriculture is basically characterized by the capital invested per worker. | | | | 48 |
| 6. From the historical standpoint, agriculture can be seen to tend towards heterogeneous structures. | | | | 51 |
| 7. Subsistence agriculture is basically characterized by a living standard exactly corresponding to the vital minimum. | | | | 52 |

## Topics for group discussion

1. Identify the main forms of socio-economic organization of agriculture in a region of your choice. Describe these main forms.
2. Describe the dominant form in more detail. Is this form favourable to economic development or not? Give reasons for your reply.
3. Do you feel that peasant agriculture is in a position where it is subject to domination? Analyse the factors responsible for this domination.
4. Has Western penetration altered traditional agriculture? If so, in what way?
5. To what extent are the different forms of socio-economic organization of agriculture commercialized?
6. How does the growing commercialization of agriculture come about?

# 3

# *Over-all underdevelopment and agricultural underdevelopment*

**58 Analysis of underdevelopment.** Since agriculture is the main sector of the over-all economy and underdeveloped societies have, to a large extent, remained agricultural societies in which agrarian forces continue to play an important role, the last chapter was devoted to the forms of socio-economic organization of agriculture.

Our aim now is to extend our investigations to the whole economy with a view to describing the phenomenon of underdevelopment in its entirety.

Several approaches can be used to achieve this aim, all inspired by the considerable literature on underdevelopment published in recent years. An initial approach is by means of the method of international comparisons, and consists in comparing the LDCs with the pre-industrial economies of the Western countries, or with the DCs. In the first case, the historical context should be constantly borne in mind; in the second, the definition of underdevelopment as a function of 'what is missing in the LDCs' compared with the DCs stems from the method entailing reference to a model, and this gives rise to a number of problems.

A second approach consists in identifying the factors which slow down or inhibit development.

Thus underdevelopment has been regarded as a system made up of a number of blocked relationships which together consequently generate a state of stagnation. This approach has to be filled out by means of a careful study of the structures since the development process basically stems from structural change.

Analysis of underdevelopment cannot, however, be based exclusively on descriptions of the structures and internal mechanisms of the LDCs. Many writers have attached considerable importance to relations between the DCs and LDCs since, according to some of them, these relations are a key factor in implementing the process of world-wide development whereas, according to others, they might well play a basic role in underdevelopment.

In the final analysis, the term 'underdeveloped country' implies that there is scope for development; ultimately, development possibilities are determined by taking stock of the unused capacities and potentialities.

In their own way, each of these different approaches can shed light on several aspects of underdevelopment, but a comprehensive and coherent picture of the concept of underdevelopment can probably only be obtained by making use of them all.

**59 Global and agricultural underdevelopment.** The existing structures of agriculture originated in traditional society and were usually changed by Western intervention.

In no country does agriculture form a homogeneous whole. As far as the indices of development are concerned, the characteristics of semi-feudal agriculture can be said to be as follows. Land productivity is low, but labour productivity may be relatively high (to the extent to which landowners shift the burden of underemployment onto the subsistence holdings). The distribution of income is grossly unbalanced: the peasants have very low living levels and no savings, while the landowners have very large incomes, although these do not necessarily make any contribution to national development and may well be used instead for prestige spending and investments outside the country.

Semi-capitalistic agriculture has a number of specific features: production is well organized, land productivity, and, more especially, labour productivity are very high and production is principally geared to exports.

In some cases, the export sector based on plantation agriculture occupies a preponderant place. In extreme cases, through having the virtual monopoly of land and investment, it may actually stifle the development of peasant agriculture, which aims at the domestic market.

Peasant agriculture may display a wide variety of forms in different situations, ranging from those most subjected to domination (e.g. minifundia holdings) to semi-capitalistic forms, such as indigenous plantations, which produce for export and employ a large wage-labour force. As a rule, however, peasant agriculture is characterized by the triple domination of landowners, traders and money-lenders, where the first two may often assume the role of the third.

Viewed as a whole within the national economy, agriculture has, to a marked degree, all the features of the underdevelopment situation, with its low input and income per worker, particularly low levels of nutrition, hygiene, training and communication, large underemployed labour capacity, low or zero money savings, etc.

Agricultural underdevelopment is therefore a basic component of over-all underdevelopment. In countries where the growth of the economy as a whole is founded on the agricultural sector, agricultural underdevelopment can be regarded as the root cause of over-all underdevelopment and the transformation of agriculture should therefore be given priority. But this transformation is possible only if agriculture is stimulated by effective demand and agricultural underemployment can be eliminated. This can only be done by developing the non-agricultural sectors. There would be no point, therefore, in seeking the causes of over-all underdevelopment in agricultural underdevelopment alone: underdevelopment is an over-all phenomenon, the outcome of a historical process and characterized by a specific socio-economic context and built-in mechanisms which have the effect of slowing down and inhibiting—and hence causing stagnation—in relation to the internal and external economic structures.

**60 Basic aggregates and indicators in the agricultural sector.** So far, we have not considered the fundamental aggregates and indicators of the agricultural sector. However, most of the concepts we have already met, such as production, product, income and so on, also apply to this sector.

Gross final agricultural production is equal to total agricultural production minus the amounts set aside for the needs of the agricultural sector itself, such as seed stocks and animal feedingstuffs. Gross final agricultural production is also equal to the marketable agricultural output, regardless of whether this is really marketed or is consumed by the people living on the farm (home consumption).

TABLE 14. Summary table of concepts used in agricultural sector accounts (international nomenclature)

| Symbol | Concept used | |
|---|---|---|
| Sn | 1 | Cash sales |
| Si | 2 | Imputed sales (production for own account) |
| CS | 3 | Changes in stocks |
| OAC | 4 | Own-account construction |
| GAOm | 5 | Gross output of agriculture at market prices: (1) + (2) + (3) + (4) |
| COE | 6 | Current operating expenses (purchases from other sectors and from abroad, except capital equipment) |
| GVAm or GAPm | 7 | Gross value added or gross product of agriculture (at market prices): (5) – (6) |
| Su | 8 | Subsidies |
| IT | 9 | Indirect taxes |
| GVAc or GAPc | 10 | Gross product of agriculture at factor cost: (7) + (8) – (9) |
| D | 11 | Depreciation allowance |
| NVAc or NAPc | 12 | Net product of agriculture at factor cost or total income generated in agriculture: (10) – (11) |
| | | Distribution of income generated |
| W | 12(*a*) | Compensation of employees |
| R | 12(*b*) | Rent and interest |
| LM | 12(*c*) | Labour and management income for farm operators and unpaid family labour |

*Source:* ECE/FAO, *Agricultural Sector Accounts and Tables*, Geneva, 1956 (AGRI/113.)

The value added by the agricultural sector is equal to final agricultural production minus intermediate consumption or current purchases which the agricultural sector makes from other branches of the economy (fertilizers, fuel, products for combating crop pests, etc.).

The gross value added is also called the agricultural gross domestic product, which can be estimated at market (current) prices or at factor cost. After provision for depreciation, the result is the net agricultural product, which also corresponds to the total income generated in the agricultural sector.

Table 14, which uses the recognized international terminology, illustrates the main accounting concepts for the agricultural sector.

In practice, however, it is very difficult to determine these data, owing to the inadequate statistical apparatus, the lack of uniformity in the agricultural sector, the size of the subsistence sector and the problem of selecting average agricultural prices that have any real meaning.

From the economic standpoint, agriculture can be divided into three subsectors: the subsistence subsector, the sector in the process of becoming commercialized and the commercialized sector. In order to obtain a clearer picture of the underdeveloped countries, it would be very useful to determine the relative importance of these three subsectors and to work out averages for each of them. There are marked fluctuations in agricultural production from one year to the next, especially in the LDCs, where 'natural factors' still play an essential part in production. Hence it is often preferable to calculate and compare averages covering a period of several years.

International comparisons can be based on final agricultural production or on the value added per hectare or per unit of labour, on the number of people fed per hectare or per worker or on the volume of agricultural and food exports and imports. Since the statistics available are not adequate, it is sometimes necessary to confine consideration to the data 'per agricultural inhabitant'—this term includes both the active and inactive members of the population—because it is not possible to calculate the production or value added per agricultural worker (i.e. per active member of the population).

Most of the available international data on agriculture are compiled by FAO. Table 5A in Appendix 2 indicates the basic features of the agricultural economy in about 1965; the data are taken from the 1970 edition of FAO's report on the state of food and agriculture in the world. This table will help to illustrate our analyses of agricultural underdevelopment.

## Underdevelopment and the historical context

**61 Comparison of historical and present-day traditional societies**. Comparisons are sometimes made between present-day underdeveloped societies and Western societies as they were in the pre-industrial era.

Analogies can be drawn from such comparisons, but at the same time they reveal fundamental differences arising out of specific geographical circumstances and, above all, out of markedly different historical contexts.

It is true that present-day underdeveloped societies display obvious analogies with historical underdeveloped societies such as those that existed in Europe, America and Japan 200 or even only fifty years ago. These are 'traditional' societies, of an agricultural, pre-industrial kind, based on subsistence agriculture and craft-based production (sometimes highly developed). Biological energy is the main motive force and there is little recourse to technical capital. Labour productivity is low and underemployment is chronic, resulting in periodic or semi-permanent famine. The forms of organization are pre-capitalist or pre-socialist.

Analogies between historical and present-day pre-industrial societies can be misleading, however: the general historical conditions of the mid-twentieth century are significantly different from those prevailing in pre-industrial Western societies.

The basic differences stem from the penetration of traditional societies in the LDCs by advanced societies—a factor which has given rise to the dualist structure of the socio-economic systems—and from the real nature of the external relations existing between the DCs and the LDCs.

The dualist structure, which can be considered as characteristic of underdevelopment, is defined by the existence side by side (or slight interdependence) of two economic sectors, that of the indigenous economy and that of the implanted economy.

The implanted economy covers mining and other types of industry, and also plantation agriculture. Depending on the periods in history at which Western society penetrated traditional societies, different forms of socio-economic organization were introduced (slavery, feudal and semi-feudal, capitalist and semi-capitalist). These forms have generally evolved in the direction of capitalist or semi-capitalist organization.

Traditional societies were changed by the direct or indirect agency of Western penetration and, through the interplay of various processes, have advanced from the primary traditional stage to the secondary traditional stage. These societies have become market-oriented, though subsistence agriculture usually still plays an important or very important part in them, and they have adopted pre-capitalist or pre-socialist forms of organization.

The semi-capitalistic sector of the LDCs in which advanced technology and industrial production processes are used and labour productivity is high is often known as the 'modern sector' by contrast with the pre-capitalistic sectors with their traditional production methods, low labour productivity and unpredictable output. Confusion may occur at both the analytical and the practical level when attempts are made to distinguish between the so-called modern and traditional sectors. Moreover, this distinction does not altogether coincide with our own distinction between the implanted and indigenous sectors.

The dualist structure is bound up with the economic penetration of advanced nations and with colonialism. Obviously pre-industrial Western societies never encountered the same situations: their development process was generated by internal forces and profited from their position as dominant powers during the historical period of their development.

Furthermore, contemporary international relations have grown out of relations initiated by the West, in the light of Western economic needs, and link nations which are at different stages of socio-economic development.

The growth of the LDCs through external impetus results in an economy that is sometimes qualified as outward-looking and whose output is directed towards satisfying demand in the advanced nations, rather than towards creating an agricultural and industrial infrastructure such as these countries need in order to carry out a process of development properly speaking.

In their relations with the underdeveloped countries, the industrial nations, whether they be capitalist or socialist, can contribute to progress by introducing experts, capital, forms of socio-economic organization, technology and so on, but they can also dominate the financial, economic, social and political sectors to such an extent as to curb or inhibit the development of pre-industrial societies. The fact is that these societies depend for their development on the export of a small number of raw materials and agricultural products and on the import of machinery and other industrial goods. Their newly created industries have to contend with powerful industrial rivals, their expanding trade has to be geared to the activities of—or enter into confrontation with—well-entrenched commercial firms, increases in their production capacity are often dependent on capital inflows, etc. The industrialized nations possess both the tools of progress and the tools of domination and the manner in which they wield them deserves careful thought and close attention.

**62 Comparison of developed and underdeveloped societies.** Another approach using the comparative method is to describe the LDCs with reference to the DCs. Development is a relative concept which only becomes meaningful when related to suitably chosen index levels. This is what was done in the introductory chapter to this book: inequalities in development were highlighted by comparing indices for production, income, consumption and living standards. This method is commonly used and several lists of suitable indices or indicators have been put forward. Those we considered in the preamble were indicative of results. In the following pages, we shall examine series that are indicative of means (savings, investment, qualified personnel, imports, etc.), which make it possible to assess growth and development capacity.

However, the approach whereby appropriate indicators are used to compare the LDCs and DCs, which ultimately leads on to situating and even describing the LDCs in relation to the DCs, may be termed a negative method. By this method, the LDCs are, in fact, characterized according to what they lack compared with the DCs, i.e. inadequate production, inadequate income and hence inadequate investment, inadequate labour productivity, etc.

If they continue to reason by analogy, the 'experts' may be prompted to suggest the establishment of development institutions which have proved successful in other countries. They may recommend either the competitive model and free enterprise or total planning and production co-operatives, with all that goes with them, but these suggestions are inspired by traditional development patterns, whether they be capitalist or socialist. Since the historical conditions prevailing in the underdeveloped countries are to some extent specific to those countries, institutions that are likewise specific or adapted to the purpose have to be established. It is true that experience of organizing successful development processes is of great importance, but it is becoming increasingly obvious that development processes cannot be exported and that development requires the determination and imaginative participation of the peoples concerned. This idea of the specific or specially adapted path to development is acknowledged by many authorities but, in practice, it invariably gives rise to difficult political problems.

The line of reasoning which entails comparing the underdeveloped countries with historical or geographical models can yield positive results provided it is conducted in a critical frame of mind, but it may also foster various illusions or result in dogmatic formulae.

**63 Comparison of progressive and backward agriculture.** Table 15 provides some basic information on the large LDCs and some of the advanced countries in about 1965.

The size of the agricultural population, as a percentage of the total population, varies from 4 per cent in the United Kingdom to 89 per cent in Ethiopia. The relative size of the agricultural population is bound up with both the level of development and international trade policy. The United Kingdom has a particularly low agricultural population because of the high proportion—some 40 per cent—of agricultural and food imports in total consumption. In the United States, the agricultural population still represents some 8 per cent of the total population and in most European countries, the figure is higher than 10 per cent. In most of the LDCs, the agricultural population is higher or even much higher than 50 per cent, as in the largest LDCs where it accounts for more than 70 per cent of the total population.

The GDP of agricultural origin (or value added by agriculture), expressed as a percentage of the total GDP, is in all cases lower than the percentage of the total population engaged in agriculture. This difference can be explained by the low level of *per capita* production in agriculture (if the GDP is calculated at constant prices) and by the relationships between the prices for agricultural products and those for non-agricultural products (if the GDP is calculated at current prices). The difference varies from country to country but, as a rule, the ratio of agricultural GDP to total GDP is often twice as low as that of the agricultural population to total population. This situation also reflects the low level of agricultural income compared with non-agricultural income.

*Agriculture holds a significant place in foreign trade*, especially where exports are concerned. Agricultural and food products account for more than 80 per cent of total exports in many LDCs (Ethiopia, Argentina, Brazil, Burma, Philippines, Turkey) but they are also quite high in Greece (78 per cent), Spain (50 per cent)

TABLE 15. Comparison of some fundamental characteristics of agriculture in the large LDCs and certain DCs

| Country | *Per capita* GDP (in U.S. dollars) (1965) | Agricultural population (percentage of total) | Agricultural GDP | | Share of agriculture in total trade (percentage) | | Hectares of land per head of agricultural population | Fertilizer consumption kg/ha |
|---|---|---|---|---|---|---|---|---|
| | | | Percentage of total GDP | Per head of agricultural population (in U.S. dollars) | Exports | Imports | | |
| Zaire | 81 | 70 | 26 | 22 | — | — | — | — |
| Ethiopia | 56 | 89 | 66 | 40 | 98 | 8 | 0.62 | — |
| Nigeria | 74 | 79 | 55 | 51 | 66 | 10 | — | — |
| Egypt | 166 | 55 | 29 | 87 | 71 | 37 | 0.17 | 122 |
| Argentina | 769 | 20 | 17 | 639 | 94 | 17 | 6.44 | 1 |
| Brazil | 207 | 50 | 30 | 134 | 83 | 21 | — | — |
| Colombia | 275 | 50 | 32 | 168 | 75 | 14 | — | — |
| Mexico | 441 | 52 | 17 | 139 | 57 | 9 | — | — |
| Burma | 64 | 62 | 32 | 37 | 85 | 15 | 1.04 | 1 |
| Korea (Republic of) | 107 | 55 | 41 | 73 | 35 | 33 | 0.14 | 149 |
| India | 95 | 70 | 46 | 62 | 38 | 31 | 0.48 | 5 |
| Indonesia | 83 | — | — | — | — | — | — | — |
| Iran | 256 | 49 | 26 | 134 | 8 | 18 | — | — |
| Pakistan | 101 | 74 | 47 | 58 | 62 | 23 | 0.34 | 5 |
| Philippines | 240 | 58 | 32 | 82 | 85 | 25 | 0.44 | 14 |
| Thailand | 116 | 78 | 32 | 52 | 84 | 9 | 0.48 | 3 |
| Turkey | 258 | 73 | 36 | 127 | 88 | 11 | 11.5 | 6 |
| Spain | 632 | 35 | 18 | 325 | 50 | 25 | 1.86 | 38 |
| Greece | 594 | 54 | 25 | 227 | 78 | 23 | 0.84 | 65 |
| Japan | 838 | 24 | 12 | 346 | 6 | 43 | 0.25 | 321 |
| France | 1,732 | 16 | 8 | 816 | 20 | 30 | 2.68 | 151 |
| United Kingdom | 1,590 | 4 | 3 | 1,280 | 8 | 45 | 3.68 | 208 |
| Sweden | 2,406 | 13 | 7 | 1,265 | 23 | 16 | 3.60 | 117 |
| United States of America | 3,233 | 8 | 4 | 1,422 | 26 | 36 | 13 | 39 |
| U.S.S.R. | — | 32 | 23 | — | 21 | 28 | 3.30 | 23 |

*Source:* FAO, *The State of Food and Agriculture, 1970. Annual Report*, 274 p.

and even in the United States (26 per cent). Although agricultural imports represent a relatively low proportion of total imports in the LDCs, they nevertheless amount to the quite high figure of 30 per cent in Egypt, India and the Republic of Korea. So high a proportion of agricultural imports in the LDCs is usually the sign that production is not increasing at the same rate as food demand, whence the need to import foodstuffs, often to the detriment of the capital goods that are so necessary for starting up development processes. In the DCs, the high proportion of agricultural and food imports in relation to total imports, amounting to 30 per cent to 40 per cent, can be explained both by the import of tropical products and by the specialization of the highly industrialized advanced countries.

Table 15 highlights an important feature in the structure of international trade between the DCs and the LDCs: the former import foodstuffs and the latter export them.

The land area available per head of agricultural or of total population varies appreciably from one region to another, as can be seen from Table 16.

The area available per head of total population is relatively large in Africa and Latin America and relatively small in Asia and the Far East.

TABLE 16. Arable land per head of population (1962) (in hectares)

| Region | Agricultural population | Total population |
|---|---|---|
| Africa south of the Sahara | 0.89 | 0.62 |
| Asia and the Far East | 0.31 | 0.19 |
| Latin America | 1.32 | 0.43 |
| Near East and North Africa | 0.72 | 0.32 |
| TOTAL | 0.56 | 0.31 |

*Source:* FAO, *Provisional Indicative World Plan for Agricultural Development. Summary*, p. 14, Rome, FAO, 1970, 72 p.

The distribution of the area available per head of agricultural population is similar, but the scatter is wider. In Latin America, it is, on average, four times greater than in Asia and the Far East and one and a half to two times greater than in Africa and the Near East.

Table 15 shows that if the averages are compared on a country-to-country basis instead of by regions, the scatter is even more pronounced. The Republic of Korea, with 0.14 hectares, has the smallest area per head of agricultural population, while the United States, with 13 hectares—ninety times the Korean average—has the largest. In the Philippines and India, for example, the area is less than 0.5 hectares, as compared with some 3 hectares in Western Europe and the Soviet Union and more than 6 hectares in Argentina.

The area available per farmer largely explains the agricultural systems used, in respect of both the choice of crops grown and the intensity of production. As a general rule, the smaller the area per head of agricultural population, the larger the proportion given over to subsistence crops and the higher the production and product per hectare. By contrast, if the area is larger, relatively more land will be devoted to cash crops and labour productivity will be high. However, high land productivity is often achieved on small farms in the LDCs through intensive use of labour, by increasing the number of crops grown on the same plot and by ensuring careful soil preparation. In fact, Table 15 shows that fertilizers, which are an important factor in increasing yields per hectare, are used to a much greater extent in the highly industrialized countries like Japan, France, the United Kingdom and Sweden than in the LDCs. In India and Pakistan, consumption is particularly low. This situation is due both to the low money income of the agricultural population, which does not allow them to buy fertilizers, and to the low level of development of the fertilizer industry. However, some LDCs, like Egypt and the Republic of Korea, have considerably increased their fertilizer consumption.

These differences between the characteristics of agricultural production in the DCs and LDCs cannot be explained solely by agricultural factors such as soil conditions and climate. They are above all due to the general socio-economic context, embracing population pressure and total population growth, *per capita* income levels and growth, the place occupied by agricultural products and foodstuffs in net foreign trade (which itself depends on the structure of foreign trade), the extent to which the economy as a whole is industrialized, the intensity of trade flows between agriculture and the other sectors of the economy and the rate of population growth and of the creation of non-agricultural job opportunities, which governs the rate of growth (or decline) of the agricultural population.

The basic characteristics of agriculture arise principally from the over-all socio-economic structure of which agriculture is one component. Agricultural underdevelopment is the result of over-all underdevelopment.

The total GDP *per capita* and the agricultural GDP per head of the agricultural population can be compared in Table 8. These ratios can be considered as indicators of labour productivity (provided the ratio for the number of people dependent on each working member of the population is of the same order of magnitude). The table shows that agricultural GDP (GDPA) is always lower, but rises with total GDP (GDPT).

The same finding emerges from the averages by countries in Table 15: countries with a high GDPT *per capita* also have a high GDPA.

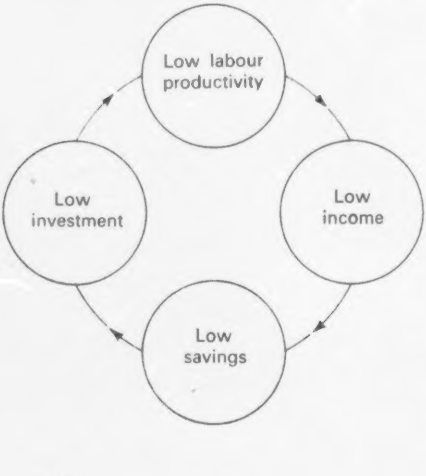
For example, the United States, which has the highest GDPT *per capita* ($3,233), also has the highest GDPA ($1,422) while Ethiopia, which has the lowest GDPT ($56), also has one of the lowest GDPAs ($40).

In the light of these findings, it can be stressed once again that over-all development stems from high productivity spreading to all sectors of the economy, including agriculture, and that over-all underdevelopment and agricultural underdevelopment are linked. However, it is only fair to acknowledge that, since productivity in agriculture is always lower than in the other sectors of the economy, and since the agricultural sector is relatively large in the LDCs, the low productivity of agricultural labour is largely responsible for the low average productivity of the underdeveloped economies.

## Factors curbing and inhibiting growth

**64 Circles of poverty.** Underdevelopment is also regarded as a system made up of a number of blocked relationships which thus bring about a state of stagnation. This description is known by the term 'circles of poverty' or interlocking vicious circles. These relationships are shown here in simple form.

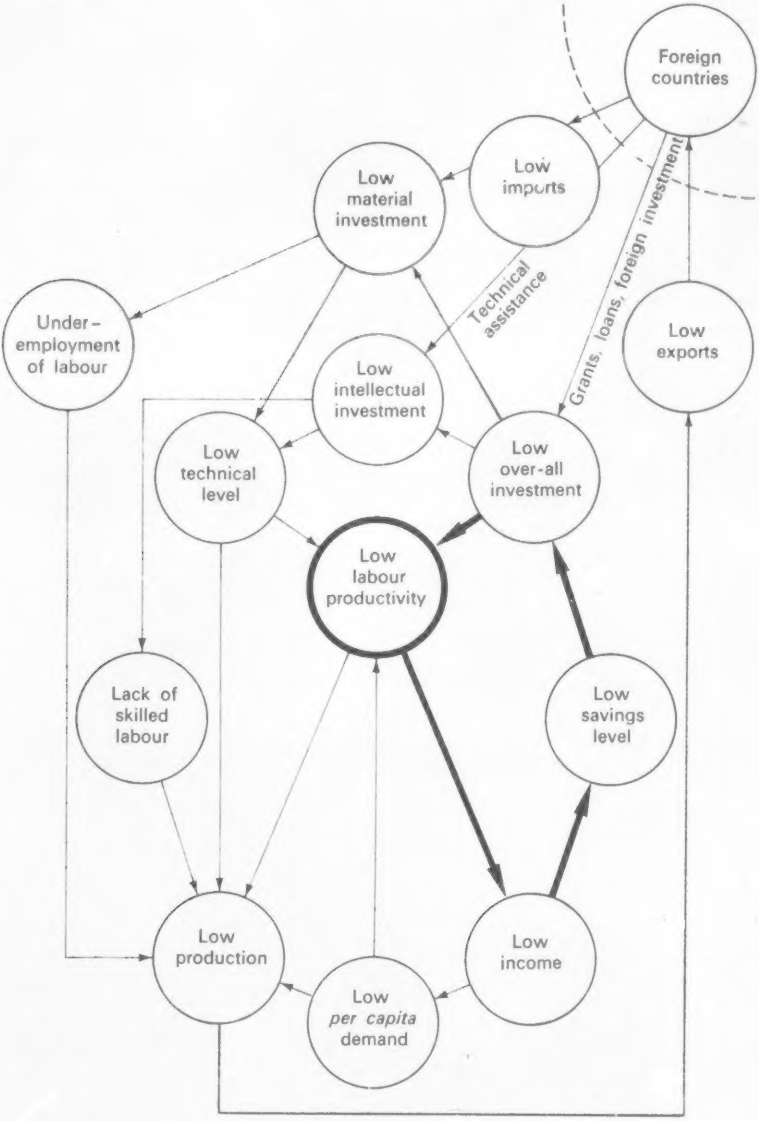
Low labour productivity leads to low *per capita* incomes, which may be just sufficient to pay for food consumption and a few other basic necessities. In such circumstances, savings are bound to be slight and hence investment is also slight, there is little increase in the amount of technical capital available per worker and labour productivity therefore remains low. The circle is closed. Underdevelopment continues to exist as long as the circle of poverty remains unbroken.



However, this simplified view of things is quite inadequate to explain the reality of underdevelopment. It makes no allowance for the inequalities of income distribution or the inequalities of productivity levels, both of which originate in the basic structures of the underdeveloped society.

**65 Factors curbing or inhibiting development.** The diagram in Figure 8 is similar in its principles to the above diagram, but it is more detailed and brings out more clearly the factors curbing or inhibiting development. The heavy lines reproduce the original diagram.

FIG. 8. Circles of poverty.


Foreign countries
Low imports
Low material investment
Under-employment of labour
Technical assistance
Grants, loans, foreign investment
Low exports
Low intellectual investment
Low technical level
Low over-all investment
Low labour productivity
Lack of skilled labour
Low savings level
Low production
Low income
Low *per capita* demand

Low *per capita* income necessarily leads to low demand and hence there is little incentive to increase labour productivity. Low over-all investment results in low intellectual and low material investment. Intellectual investment is concerned with research and teaching and the spread of ideas and information. If investment of this type is slight, technology makes little progress and, in particular, advanced technology is not tailored to a given stage of development. As a result, labour productivity, which largely depends on technology, is liable to remain at a low level.

Low over-all investment results in low material investment and the choice that has to be made between intellectual and material investment is a difficult one, fraught with numerous implications and consequences for the future.

The creation of job opportunities outside the agricultural sector requires prior investment on a scale which will depend on the extent to which industry is capitalized (the amount of capital absorbed per unit of labour). The low level of investment is one of the causes of chronic underemployment in the LDCs.

The ultimate consequence of underemployment of the labour capacity, the lack of skilled labour and low labour productivity is low total production. This may lead to a low level of exports, resulting in a shortage of foreign exchange, whereas imports may be necessary or even essential. This situation normally gives rise to a foreign trade imbalance and a balance of payments deficit. It is true that the developed countries can help to change the quantitative relationships and reduce bottle-necks and obstacles by contributing to intellectual and material investment, thereby facilitating take-off and the development process. But foreign aid, whatever its size, is still of limited scope.

The first summary approach will be examined in greater depth in a later section. The United Nations experts who are studying the problems encountered and policies followed during the First Development Decade have identified six basic factors which are responsible for slowing down development. These are rapid population growth, lack of savings, shortage of foreign exchange or misdirected use of the foreign exchange available, a low level of education and information, insufficient incentives for agriculture and unsuitable institutions.

In the present chapter we shall consider only the problems raised by population growth and shortage of capital. The other aspects have already been dealt with or will be discussed in Part II.

### *Population growth and underdevelopment*

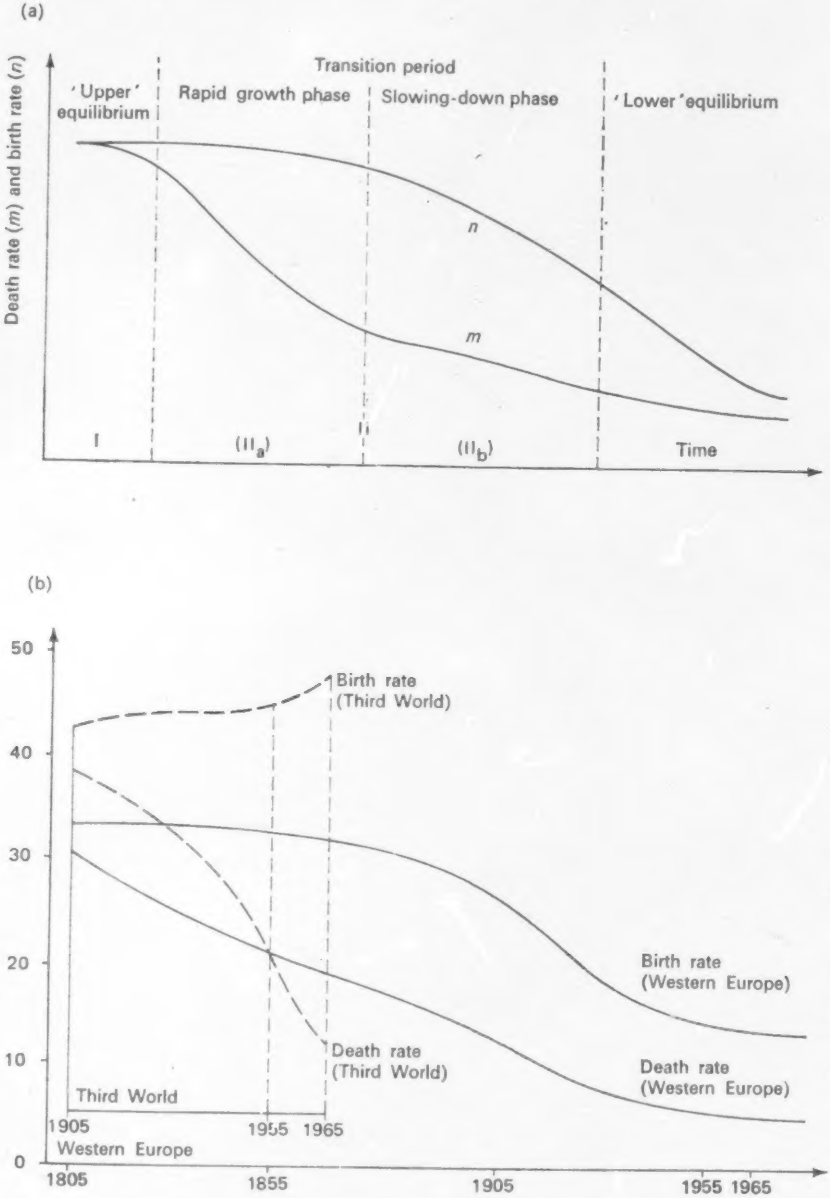
**66 Demographic model.** A demographic model is characterized by the birth or natality rate ($n$), the death or mortality rate ($m$) and the resulting demographic growth ($n - m = r$).

Three periods can be distinguished (Fig. 9 (a)):

1. The period of the natural demographic balance characterized by high birth and death rates (in equilibrium) and a stable population ($n - m = 0$).
2. The transition period, comprising two sub-periods: (a) a period of relatively high demographic growth ($n - m = r$), and (b) a period during which demographic growth slackens off.
3. The period of demographic maturity, with low birth and death rates (again in virtual equilibrium) and low demographic growth.

Until recently, the LDCs were at the natural demographic stage but they have now entered the transition period, which is marked by two specific basic

FIG. 9. Models of demographic growth: (*a*) after R. Bastianetto, *Essais sur le Démarrage des Pays sous-développés*, p. 121, graph III, Paris, Cujas, 1968, 379 p.; (*b*) after Alfred Sauvy, *Malthus et les Deux Marx*, p. 105, Paris, Denoël, 1963, 353 p.



features: sharp fall in death rates (in the space of a few years, the underdeveloped countries have reaped the harvest of considerable medical progress) and the continuance of high birth rates. This situation is sometimes described by saying that the underdeveloped countries have the birth rate of a traditional society and the death rate of an industrial society. It leads to explosive demographic growth, with rates much higher than those recorded in Europe at the beginning of its development process. The difference is highlighted on the graph plotted by A. Sauvy (Fig. 9 (b)).

This graph shows the differences in demographic structure between Europe in the nineteenth century (the period of take-off and development) and the Third World countries. The causes of the demographic explosion in the underdeveloped countries, i.e. the sharp fall in the death rate and the sustained—and even rising—birth rate, are clearly illustrated.

The demographic model considered above is of the closed type; actual population growth depends on demographic growth and on net population transfers ($t$).

This can be represented by the following expression: $P = f(m,n,t)$.

Population transfers played a decisive role in the settlement and population growth of a number of countries such as the United States, Canada, Australia and New Zealand.

**67 Population growth and employment.** Population growth gives rise to an equivalent growth in consumers and producers, in that each individual is both one and the other at the same time. But, as we have seen, with constant technology, production does not increase in proportion to needs and, in some conditions, *per capita* production may even decline.

In addition, since the LDCs are economies of underemployment, a fundamental problem is that of creating job opportunities to keep pace with population growth. If the working population increases at the same rate of growth as the population reaching working age, underemployment remains at the same level. If underemployment is to be eliminated, the rate at which jobs are created has to be higher than the rate of population growth.

Since the growth of employment in the agricultural sector is usually close to an upper limit, it is reasonable to contemplate reducing agricultural underemployment by creating non-agricultural job opportunities. To do this, growth rates in the non-agricultural sector have to be higher than population growth, so as to allow for movement of some of the agricultural population into the towns.

Few LDCs appear to have succeeded in reducing the extent of underemployment in recent years and this factor is disquieting. Table 5A in Appendix 2 shows that, with the exception of the Republic of Korea, unemployment rose in most of the countries for which statistics are available (the unreliability of statistics for the number of registered unemployed should not be overlooked).

The LDC's main difficulty lies in the fact that the agricultural sector represents a relatively large portion of the economy as a whole and has a low employment growth rate, whereas the industrial sector has a relatively high employment growth rate but is of little importance in the over-all economy.

In Latin America, for example, the labour force expanded by 2.8 % a year in the 1960s; agriculture, accounting for 45 % of the economically active population in the mid-decade, increased its employment by only 1.5 % a year, and manufacturing, accounting for 14 % of the economically active population, increased its employment by 2.3 % a year. Services, already accounting for about a third of the working force increased their employment by 4.6 % a year [2, p. 130].

More generally, if $\alpha_a$, $\alpha_i$, and $\alpha_s$ represent respectively the relative size of the population engaged in agriculture, industry and services out of the total working population, and if $r_a$, $r_i$ and $r_s$ are the respective employment growth rates, the weighted average over-all growth is given by the following equation:

$$\bar{r}_e = \alpha_a r_a + \alpha_i r_i + \alpha_s r_s$$

$$\alpha_a = 50 \qquad \alpha_i = 20 \qquad \alpha_s = 30$$

$$r_a = 1 \qquad r_i = 3 \qquad r_s = 4$$

$$\bar{r}_e = (1 \times 0.5) + (3 \times 0.2) + (4 \times 0.3) = 2.3.$$

If the working-age population increases at the rate of 2.5 per cent to 3 per cent a year, unemployment will continue to grow.[1]

The growth of employment is restrained by the shortage of capital, among other factors. The number of jobs that can be created depends, in fact, on the volume of net investment that is possible (i.e. is actually financed), divided by the investment needed per worker. Countries that have attempted to measure the (net) investment needed per worker have arrived at figures ranging from $2,000 to $5,000 [2, p. 130].

These figures do not take account of the gross investment needed to replace worn-out equipment or to invest in infrastructure such as transport, water, gas and electricity supplies and housing.

> The countries in which the difficulties of accommodating the increase in the labour force in the modern exchange sector are likely to be most intractable are those in which the current level of fixed capital formation is relatively low and those in which the expansion in the labour force is relatively large. On the average, in the 1960s, the annual volume of investment amounted to about $140 per working-age person in Latin America, $40 in Africa and nearer $30 in Asia. The burden of absorbing new workers into occupations calling for a complementary capital input of up to a hundred times theses figures is manifestly too great to permit any rapid easing of this form of imbalance [2, p. 130-131].

This analysis also tends to show that the reduction in underemployment entails giving preference, wherever possible, to low capital-intensive industries (relatively little capital investment per worker).

**68 Population growth and dependants.** Another aspect of population growth is that it increases the number of people dependent on each adult. This pattern can be observed in Figure 10, which shows the age-structure pyramids for several of the main regions of the world.

These pyramids are built up by plotting the number of persons of either sex on the $x$-axis and the age categories on the $y$-axis.

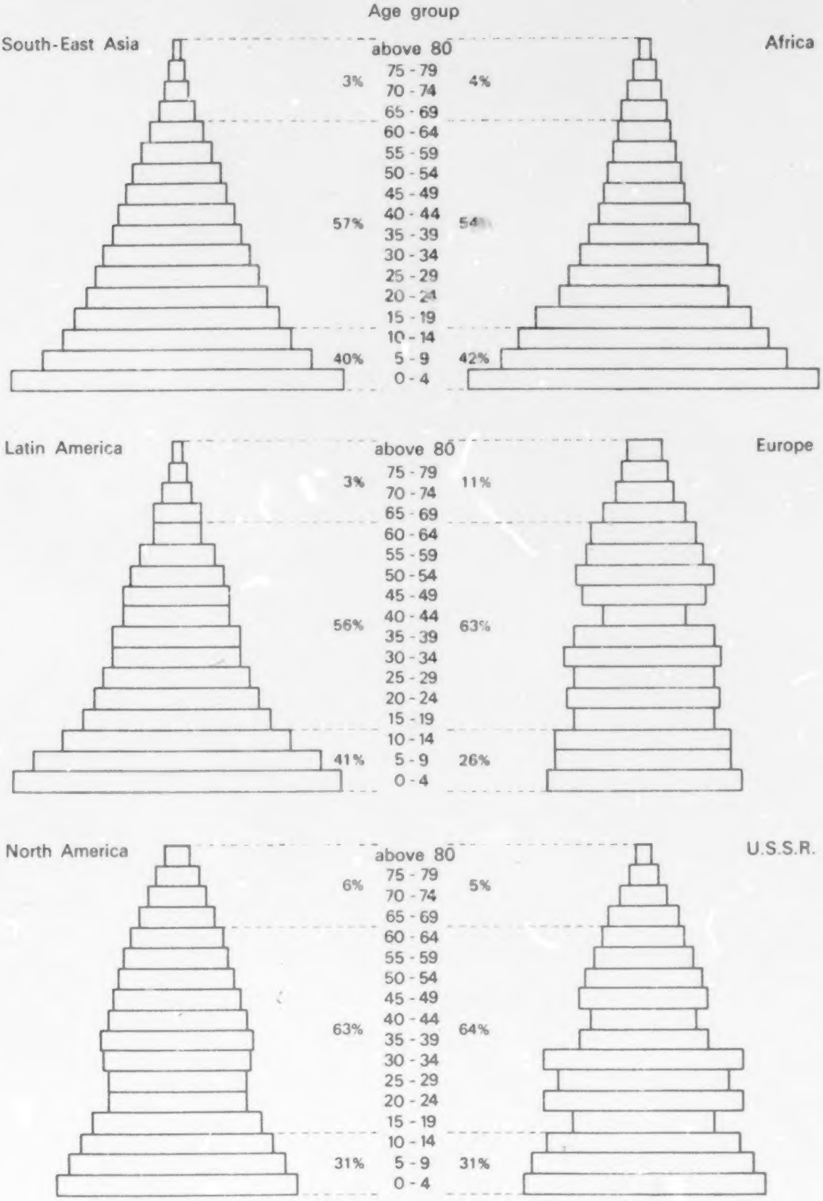
The pyramids for the LDCs are characterized by a broad base-line compared with the narrow base-line typical of the DCs. This is chiefly due to the differences in birth rates. Young people (less than 15 years old) represent about 40 per cent of the population in the LDCs and 30 per cent in the DCs. By contrast, the proportion of old people is higher in the DCs (more than 65 per cent), especially in Europe.

The dependent population, both young and old, amounts to some 45 per cent of the total population in the LDCs and from 35 per cent to 40 per cent in the DCs.

---

[1] Since the number employed is less than total population, the employment growth rate has to be higher than the population growth rate if there is to be any prospect of reducing underemployment.

FIG. 10. Age structure of population in selected regions (reproduced from *Finance and Development*, No. 4, 1969).



As a result of the large number of young people in the LDCs, investment in education is a significant item in these countries' budgets, and accounts for 3 per cent to 5 per cent of GDP, as already mentioned.

**69 Population growth and economic growth.** Population growth can have a stimulating effect on the growth of production. For example, the growth of the population may be responsible for an increase in the area under cultivation (in underpopulated countries), for intensification of production in connexion with technological change, for the development of market-oriented agriculture if population growth is accompanied by a process of economic development in which the number of non-agricultural workers is increased, etc. But excessive population growth in a given state of productive forces and production relations can mean that production is completely consumed, no savings can be set aside, foreign capital, or even food aid, has to be sought, the productivity of agricultural labour drops, undernourishment increases, the quality of the land stock deteriorates, underemployment rises and take-off becomes impossible.

We can see from Table 1A in Appendix 2 that levels of development are not linked to population density. Like the DCs, the LDCs consist of both overpopulated and underpopulated countries. Latin America, Africa and North America are relatively underpopulated, while Asia, Western Europe and Japan are relatively overpopulated.

Hence, the relationships between demographic and economic factors have to be viewed from a dynamic standpoint. As we know, *per capita* growth requires that economic growth be greater than population growth:

$$r_y = r_Y - r_p.$$

It is only from this dynamic angle, as we have seen, that the optimum population concept can be really meaningful.

In the LDCs, where growth mechanisms are curbed or obstructed, the probability of achieving higher economic growth than population growth is obviously slight or nil. It would be absurd, in such circumstances, to blame the avarice of nature for low living standards when low production growth may be due to the unsuitability of the institutions involved. In such cases, radical socio-economic changes are needed if economic growth is to occur. In order to decide whether it is legitimate, from the economic standpoint, to try to lower the birth rate, it would first be necessary to determine the economic growth rate that could be justifiably aspired to through the agency of technological change and the adaptation of institutions to the purposes required of them, and then to compare the rate so obtained with the probable population growth rate. It is difficult to make such evaluations; they are seldom attempted and are often unreliable. With the economic data currently at our disposal, non-economic arguments of a religious, moral or sociological character are consequently liable to prevail.

However, many authorities consider that the population explosion in the LDCs is an impediment to economic take-off.

During the take-off period in Western Europe, the population growth rate never rose above 0.8 per cent whereas the rate for the LDCs, at 2.5 per cent, is three times as high. It is true that technology has developed and transfers are possible provided the socio-economic structures are capable of absorbing technical progress; on the other hand, concern with the quality of life has become more insistent throughout the world.

**70 Population growth and growth of food demand and production.** This problem is one of the most crucial of all, since the nutrition level is far from satisfactory in the LDCs and the situation has apparently not improved in recent years. Balanced growth implies that food resources are capable of meeting food demand. In a subsistence economy, the equilibrium model is simple: consumption = production. In a money economy, the growth of demand depends on population growth, *per capita* income and net exports (exports minus imports).

For initial purposes, it is simpler to disregard international trade and consider the conditions of internal equilibrium. At a given point in time, the equilibrium equation can be written as follows:

$$P \times y_a = Y_a$$

where P = population, $y_a$ = *per capita* consumption and $Y_a$ = agricultural production.

The expression for balanced growth is written as follows:

$$r_p + r_{ya} = r_{Ya}.$$

This means that the growth of agricultural production must be capable of meeting population growth and the growth of *per capita* consumption.

In a market economy, the growth of *per capita* consumption depends in turn on the growth of income.

The elasticity coefficient ($\lambda_a$) relates growth of demand to growth of income.

$$\lambda_a = \frac{\frac{\Delta d}{d}}{\frac{\Delta r}{r}}$$

$\Delta d$ = variation in *per capita* food demand

$\Delta r$ = variation in *per capita* income.

Given that $\Delta d/d = r_d$ and $\Delta r/r = r_r$, the elasticity coefficient can also be written as follows:

$$\lambda_a = \frac{r_d}{r_r}$$

$r_d$ = growth of demand

$r_r$ = growth of *per capita* income.

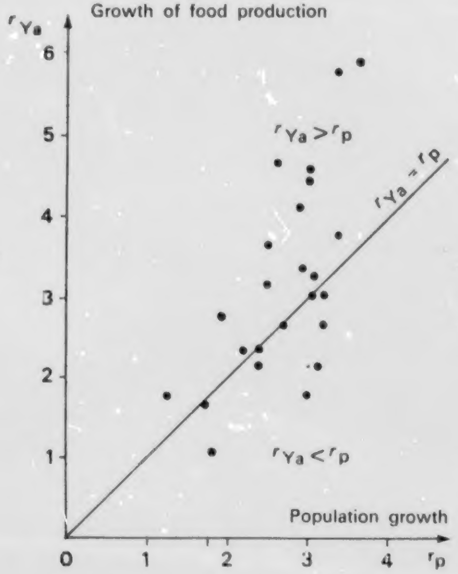
If, for example, food demand increases by 5 per cent when income increases by 10 per cent the elasticity coefficient is equal to 0.5. Moreover, if the elasticity coefficient is 0.5 and income increases by 5 per cent, food demand increases by:

$$\lambda_a = \frac{r_d}{r_r} \Rightarrow r_d = \lambda_a r_r \Rightarrow 0.5 \times 5 = 2.5 \text{ per cent.}$$

'Recent studies of consumer budget practices suggest that, on the average among developing countries, about half of any marginal increment in personal income is spent in additional food purchases' [2, p. 120]. In other words, the marginal coefficient of elasticity of food demand in the LDCs is in the region of 0.5. This figure decreases with income levels: the higher the *per capita* income, the better fed the population and the less need there is to devote a large part of additional income to improving the nutrition level, which is already quite satisfactory.

FIG. 11. Relationships between the growth of food production and population growth (graph 1) or the growth of the total food demand (graph 2) (adapted from FAO, *The State of Food and Agriculture, 1968*, Table II-3, p. 12).

Graph 1



Graph 2

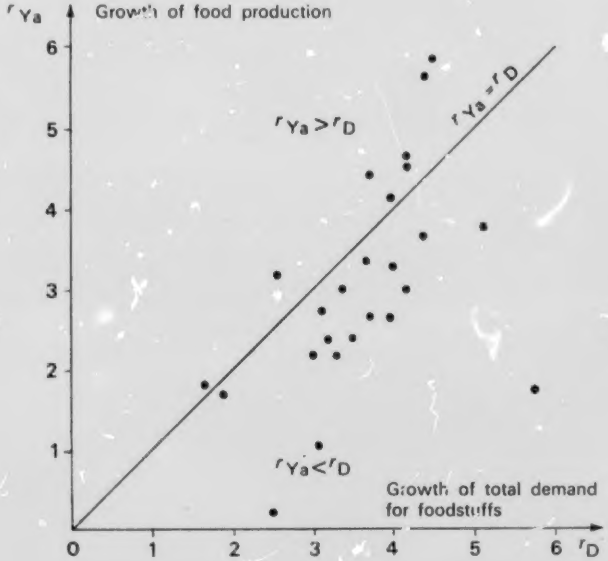


TABLE 17 Examples of the structure of food demand

| | $r_p$ | $r_r$ | $\lambda$ | $r_D$ | As percentage of | |
|---|---|---|---|---|---|---|
| | | | | | $r_p$ | $r_r$ |
| LDCs | 3 | 2 | 0.5 | 4 | 75 | 25 |
| DCs | 1 | 4 | 0.2 | 1.8 | 55 | 45 |

$r_p$ = population growth (annual average)
$r_r$ = growth of *per capita* income
$\lambda$ = elasticity of food demand in relation to income (*per capita*)
$r_D = r_p + r_r$

The final expression for balanced internal growth takes the following form:

$$r_P + \lambda_a r_r = r_{Ya}.$$

Hence, it need come as no surprise that attempts to find a meaningful correlation between growth of food production and population growth are generally unsuccessful.

The correlation is improved if the relationship between food demand and food production is examined, as can be seen from the two graphs in Figure 11. However, it cannot be completely satisfactory as the simplified model takes no account of either foreign trade or stock fluctuations. The two graphs in Figure 11 cover twenty-four LDCs over the period 1952–56 to 1962–66 (graph 1). At all points of the bisectors, we have: $r_{Ya} = r_p$ (graph 1); $r_{Ya} = r_D = r_p + \lambda r_r$ (graph 2). In six countries we have: $r_{Ya} < r_p$ (graph 1) and in seventeen countries $r_{Ya} < r_D$ (graph 2), which is the result of the influence of the growth of *per capita* income on food demand.

To some extent, the structure of food demand is characteristic of development levels. Table 17 shows two typical structures for the LDCs and DCs respectively.

Although the elasticity coefficient is relatively high in the LDCs, population growth is the main component of demand, on account of the high demographic growth rate and the low growth rate of *per capita* income. In the DCs, however, although the elasticity coefficient is low, *per capita* income growth can still be a relatively large component owing to its rapid growth rate.

**71 Recent trends: FAO indices.** In order to express agricultural growth, different indices are calculated for agricultural and food production. These indices can be based on the accounts for the agricultural sector, considered within the context of the national accounts, and refer to the value added (however, few LDCs have a sectorial accounting system and quite a long time is needed to perform the calculation) or they can be based on final production.

FAO calculates indices for production by country, by region and for the entire world.[1] These indices are based on the final production of a number of products weighted by regional production prices and worked out by means of the Laspeyres formula (weighting with the prices of the base period (see subsection 14).

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[1] 'FAO Index Numbers for Agricultural Production—Review and Prospects', *Monthly Bulletin of Agricultural Economics and Statistics,* May 1971, p. 1–7.

FIG. 12. Average annual growth of agricultural production in seventy-five developing countries (1952–54 to 1967–69) (after FAO, *The State of Food and Agriculture, 1970. Annual Report*, p. 129).

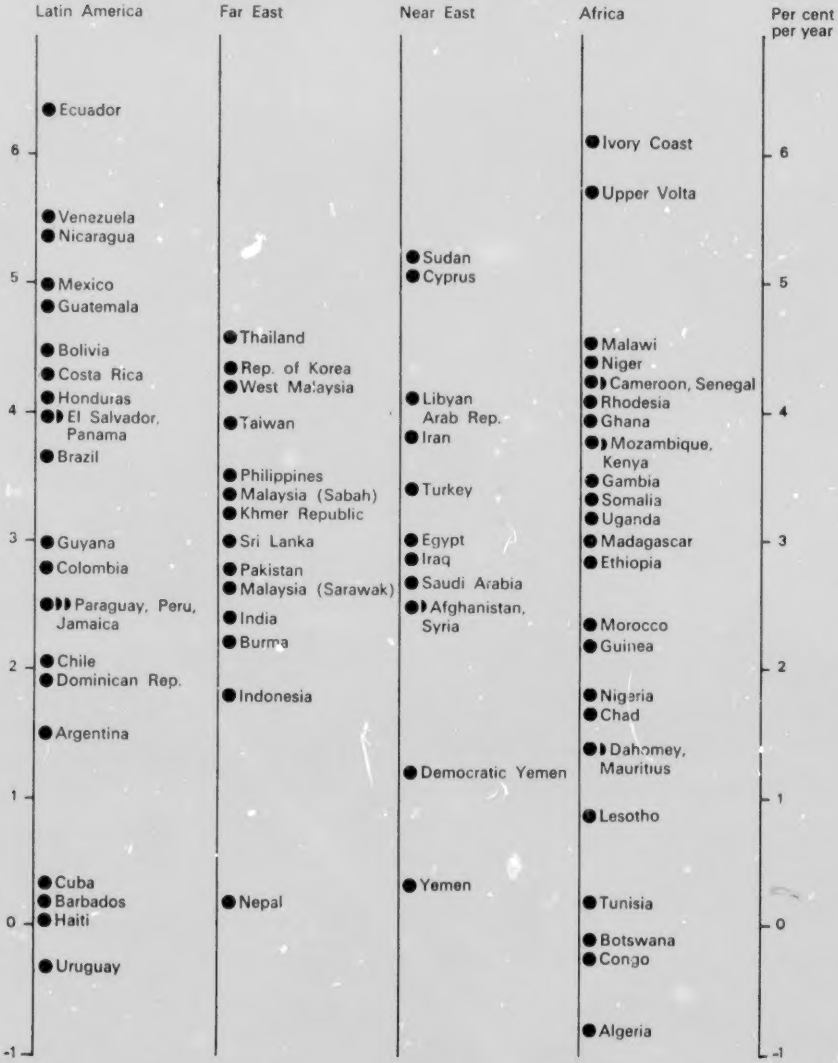
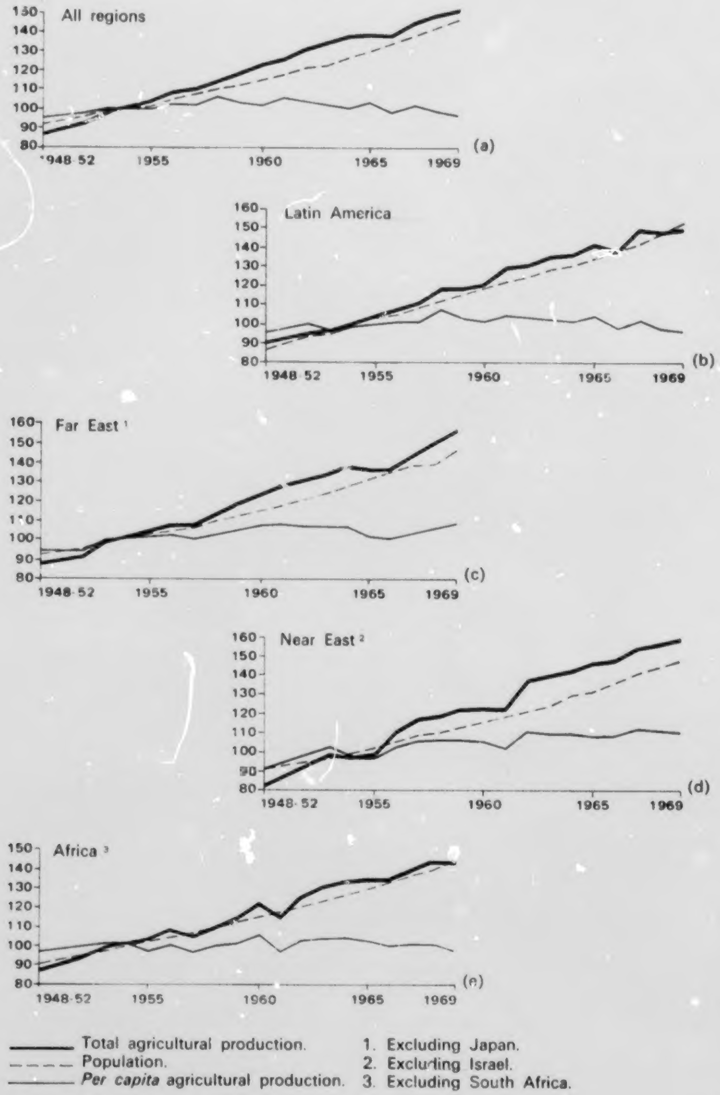


FIG. 13. Growth of agricultural production and population in the less-developed countries (base index 1952–56 = 100) (after FAO, *The State of Food and Agriculture, 1970. Annual Report*, p. 130). Production for the LDCs as a whole rose at a higher rate than population, but there were only slight improvements in *per capita* production (*a*). The situation improved in the Far East (*c*) and in the Near East (*d*), but it deteriorated in Latin America (*b*) and in Africa (*e*). In these countries an improvement in the position has only been achieved as a result of food imports.



Indices are also calculated on other bases, in particular by the United States Department of Agriculture.

Since the indices may have different structures and different weighting systems, the results are not always in agreement. However, the differences are relatively slight when averages for large regions are considered. 'For developing countries in the Western hemisphere, for example, the average annual rate of increase in agricultural production between 1960 and 1968 was 2.8 per cent according to the national accounts indicators (15 countries), 3.0 per cent according to the USDA index (22 countries) and 3.1 per cent according to the FAO index (17 countries)' [2, p. 21].

FAO publishes indices for agricultural, fishery and forest products, indices of agricultural production and indices for food products (these indices exclude coffee, tea, tobacco, inedible oilseeds, animal and vegetable fibres, and rubber) [4, p. 196].

According to the analyses made by FAO experts [4, p. 127 et seq.], in the period 1952–54 to 1967–69 agricultural production in the developing countries rose at an annual average rate of 1.9 per cent, which represents 'a creditable performance both historically (no other period is known when such a rapid growth of agricultural production was shown by any large number of countries) and in comparison with the developed countries, whose agricultural production rose no faster'.

Figure 12 shows the basic trends by countries and regions. Although the average rate is quite high, it has to be acknowledged that the rate is relatively low in some of the largest LDCs in the different regions, such as Argentina, Pakistan, India, Indonesia and Nigeria. In addition, the average growth conceals significant fluctuations in time (particularly bad harvests were recorded in 1965 and 1966).

Lastly, as a result of population growth, which rose from 2.2 per cent a year (the average for 1950–55) to 2.6 per cent (1965–69), *per capita* production either grew very slightly or even declined.

Figure 13 shows the pattern of development of the indices for total agricultural production, for population and for *per capita* agricultural production for the period 1960–69 (base index 100 in 1948-52). Production rose faster than population in the Near East and Far East, but *per capita* production remained steady and fell at certain periods. In Africa, the downward trend was particularly marked, as it was in Latin America.

> Though this does not necessarily mean that the per caput food intake in the developing countries has suffered, as shortfalls may have been made up from imports and stocks, the data do stress the stubbornness of the food problem faced by the developing countries and the importance of unflagging government commitments to efforts to overcome it [4, p. 3].

The situation has not improved in the recent past, as can be seen from Table 18.

A country-by-country analysis shows that 'food production failed to keep up with population growth in 30 of the 75 countries during the first period (1952–54 to 1959–61) and in 27 countries during the second (1959–61 to 1967–69)' [4, p. 132]. It should also be recalled that this was true of some of the largest of the large LDCs.

If this situation were to persist, there can be no doubt that agriculture would become one of the factors inhibiting development.

TABLE 18. Average annual growth of agricultural production and population by region (1959–61 to 1967–69) (after FAO, *The State of Food and Agriculture, 1970. Annual Report*, Table III-2, p. 132)

| Zone | Agricultural production | Population | *Per capita* food production |
|---|---|---|---|
| Western Europe | 2.8 | 0.9 | 1.9 |
| Eastern Europe and the U.S.S.R. | 3.2 | 1.1 | 2.1 |
| North America | 2.3 | 1.4 | 0.9 |
| Oceania | 3.8 | 2.1 | 1.7 |
| Developed countries | 2.8 | 1.1 | 1.7 |
| Latin America | 3 | 2.9 | 0.1 |
| Far East | 2.4 | 1.9 | 0.1 |
| Near East | 2.9 | 2.6 | 0.3 |
| Africa | 2.1 | 1.9 | 0.4 |
| LDCs | 2.6 | 2.6 | — |
| World | 2.8 | 2.0 | 0.7 |

### *Shortage of capital and underdevelopment*

**72 Income (or revenue) (R), consumption (C) and savings (S).** Families, governments and nations put their resources to two basic uses: they consume, i.e. they purchase consumer goods, or they save, i.e. they refrain from consuming. Savings are the basis of investment, which makes it possible to increase the production capacity of firms as well as of the national economy. Savings, consumption and investment are basic aggregates which have to be taken into account in the development process.

Let: $R = C + S$.

If we divide by R, we obtain: $\frac{R}{R} = 1 = \frac{C}{R} + \frac{S}{R}$

where $\frac{C}{R}$ = the average propensity to consume (percentage of income devoted to consumption at a given time)

$\frac{S}{R}$ = the average propensity to save.

Let us consider the variations ($\Delta$) during a given period ($0t$):

$$\Delta R = \Delta C + \Delta S$$

$$\frac{\Delta R}{\Delta R} = 1 = \frac{\Delta C}{\Delta R} + \frac{\Delta S}{\Delta R}$$

where $\frac{\Delta C}{\Delta R}$ = the marginal propensity to consume;

$\frac{\Delta S}{\Delta R}$ = the marginal propensity to save.[1]

---

[1] The Keynesian approach used here is particularly valid for the DCs. Its applicability to the LDCs is discussed in subsection 73 et seq.

There is an element of uncertainty about savings recorded in national accounts, but there can be no doubt that the LDCs save less than the DCs: the higher the *per capita* income, the easier it is, relatively speaking, to save. If income merely corresponds to the satisfaction of minimum subsistence needs, savings tend to be nil.

During the period 1966–68, the average propensity to save in the DCs with a market economy (DC(M)s) represented 22 per cent of GDP, whereas it was only 15 per cent to 16 per cent in the LDCs [2, p. 69]. Furthermore, these savings were not all at the disposal of the LDCs: foreign-owned firms, in particular, transfer part of their savings to the countries in which their capital originates. These transfers represent more than 5 per cent of GDP—and sometimes almost 30 per cent of total savings—in countries where mining industries and plantations are particularly important such as Gabon, the Ivory Coast, the Libyan Arab Republic, Mauritania, Southern Rhodesia, Uganda and the United Republic of Tanzania in Africa; and Iraq, Kuwait, Malaysia and Saudi Arabia in Asia [2, p. 71].

In addition to domestic savings, a contribution is made by foreign savings in the form of inflows of capital used for direct investments by expatriates or for investments made on the initiative of governments out of loans or grants.

If we call domestic savings $S_d$, foreign savings $S_f$, transferred domestic savings $S_t$ and the savings available $S_a$, we can write:

$$S_a = S_d + (S_f - S_t)$$
$$S_f - S_d = S_{nt} \text{ (net transfers of savings).}$$

**73 Savings and investment.** Savings are the prerequisite for investment and thus of gross domestic fixed capital formation. Provided savings are actually invested, i.e. that they are made available to the government and firms in order to enable them to improve infrastructure and increase production capacity, the following basic equation can be written: $S = I$ (investment).

This equation is a monetary equation and is of limited significance in the underdeveloped countries, especially in sectors where a barter economy predominates. Moreover the sums saved are not invested at once but are often held (cash hoarding) in the form of monetary reserves to meet subsequent needs or in the interests of safety. Hence some of the total savings lie idle.

In 1966–68, the average investment ratio in the LDCs was 17 per cent against 24 per cent in the DC(M)s. During the 1960s, as the investment ratio grew less quickly in the LDCs than in the DC(M)s, the gap tended to widen. 'The deepest cuts in investment ratios were concentrated in Africa, where a fourth of the countries registered reductions of more than 5 percentage points' [2, p. 74]. This is due particularly to the slackening-off of foreign mining investment in countries like Algeria, Gabon, Liberia, the Libyan Arab Republic, Mauritania and the People's Republic of the Congo. The most notable increases in investment ratios were Asia [2. p. 74].

By increasing the production capacity of the economy, the growth of investment should give impetus to economic growth. The pace of growth will depend on the economic efficiency of the capital invested.

The marginal efficiency of capital is obtained by dividing the growth of national income (or revenue) ($\Delta R$) by the growth of capital ($\Delta K = I$):

$$f = \frac{\Delta R}{\Delta K} = \frac{\Delta R}{I}.$$

The result expresses the increase in national income per unit of additional capital.

TABLE 19. Incremental capital/output ratios, by sector, for eighteen LDCs (1965–68)

| Agriculture | Mining | Manufactures | Energy | Transport | Other sectors | Over-all average |
|---|---|---|---|---|---|---|
| 3.2 | 3.7 | 2.8 | 12.9 | 6.4 | 2.6 | 3 |

*Source:* United Nations, *World Economic Survey, 1969–1970*, p. 81 (average of positive ratios), New York, N.Y., United Nations, 1971.

The marginal efficiency of capital is the inverse of the capital/output ratio or additional amount of capital needed to obtain an additional unit of income:

$$k = \frac{\Delta K}{\Delta R} = \frac{I}{\Delta R}.$$

The higher the marginal efficiency of capital (or the lower the capital/output ratio), the more rationally does the economy use the capital available.

Investment efficiency depends on many factors: the channelling of investment according to sectors, the ratio of productive investment (the sphere of material production) to unproductive or relatively unproductive investment (housing, buildings for government departments, etc.), short-term versus long-term productive investment, etc. The incremental capital/output ratio varies from sector to sector, as can be seen from Table 19.

The ratios are particularly high in the energy and transport sectors, as well as in agriculture. The over-all average is about 3. 'About a third of the seventy-six developing countries for which appropriate data are available had relatively low ratios—less than 3.5—both at the beginning of the decade and in the most recent period' [2, p. 82].

**74 Investment and growth.** The growth of the economy depends on the savings ratio and on the efficiency of capital. We can, in fact, write:

$$\frac{\Delta R}{R} = \frac{\Delta R}{\Delta K} \times \frac{\Delta K}{R}. \qquad (1)$$

Given I = S, we have:

$$\Delta K = I = S$$

then: $\frac{\Delta K}{R} = \frac{S}{R} = s.$

The quantity $s$ is the savings ratio or the proportion of national income that is saved. Moreover, $\Delta R/\Delta K$ is the efficiency of capital or the inverse of the capital/output ratio $k$. $\Delta R/R$ measures the growth of the national income, i.e. $r_Y$.

Finally, expression (1) can be written as follows:

$$r_Y = \frac{1}{k} s = \frac{s}{k}. \qquad (2)$$

With this formula, the growth rate of the economy is equal to the savings ratio divided by the incremental capital/output ratio.

As we have seen, if our objective is to improve what is available *per capita*, we must take into consideration not only over-all growth but also *per capita* growth; we have shown that:

$$r_y = r_Y - r_P.$$

If we consider *per capita* growth, therefore, formula (2) can be written as follows:

$$r_y = \frac{s}{k} - r_p \quad \text{(Harrod-Domar formula).} \tag{3}$$

An interesting application of this formula can be found in W. W. Rostow's book. He considers that the growth of the investment ratio is one of the fundamental prerequisites for economic take-off. 'It is . . . useful to regard as a necessary but not sufficient condition for the take-off the fact that the proportion of net investment to net national income (or net national product) rises from, say, 5% to over 10%, definitely outstripping the likely population pressure.'[1]

The '*prima facie* case' provided by Rostow is based on the model set forth above. If we assume, in fact, that the incremental capital/output ratio is 4, the population growth rate 2 per cent and the *per capita* growth rate 1 per cent, the savings can be calculated as follows:

$$r_y = \frac{s}{k} - r_p$$

$$\begin{aligned} s &= (r_y + r_p)k \\ &= (1 + 2)4 = 12 \text{ per cent.} \end{aligned}$$

If the above percentages are representative of the present or expected situation in the underdeveloped countries, it can be seen that the savings ratio should exceed 10 per cent.

In the light of his analysis, Rostow distinguishes four types of 'underdeveloped' countries:[2] (a) pre-take-off economies, with apparent investment rates of under 5 per cent; (b) economies attempting take-off, with apparent investment rates rising above 5 per cent; (c) growing economies with investment rates having reached 10 per cent or over; (d) economies where the apparent rate has gone beyond 10 per cent but where the other conditions necessary for take-off have not been fulfilled.

However, the Harrod-Domar formula and Rostow's analysis only give a very approximate picture of the facts, owing to the simplifications they entail (equating savings and investment, unreliability of statistics for calculating the capital/output ratio, limited significance of the average ratio, etc.).

Although criticisms can justifiably be levelled against the model, they do not detract from its expository value, in underscoring the decisive role of capital accumulation and efficiency in the development process and providing us with the tools for performing a theoretical analysis of the factors curbing and inhibiting growth.

**75 Savings and investment in agriculture.** The savings, capital/output and investment ratios can vary to a wide degree depending on the socio-economic organization of agriculture and the nature of agricultural production.

In peasant agriculture, savings are not entirely non-existent, although consumption levels are particularly low. The socio-economic structure is such that peasants are compelled to reduce their consumption because part of their harvest is taken by landowners, traders and money-lenders. Peasant savings are formed and transferred simultaneously and their effects on agriculture depend on the purposes for which they are used by those who benefit from the restrictions on consumption.

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[1] Rostow, op. cit., p. 37.
[2] Rostow, op. cit., p. 43–4.

According to the figures for countries where statistics are available, the share of agriculture in the distribution of investment by sectors was about one-eighth and sometimes less in 1966–67. As a rule, the proportion of agricultural investment in over-all investment is distinctly lower than that of the agricultural GDP in the total GDP. Industry is the main beneficiary of resources (about 25 per cent) and, in some countries, transport has been given priority [2, p. 79]. These trends clearly indicate that the countries in question are intent on industrializing their economies and improving communications. As a result, agriculture has been neglected in numerous cases and this has led to a slackening-off and an imbalance between the growth of food requirements and food production. Another factor affecting the situation is the incremental capital/output ratio, which is relatively high in the agricultural sector. It is higher than the over-all ratio and distinctly higher than that for manufacturing industry. This high ratio is notably due to the fact that some countries possess no agricultural infrastructure and have to establish one, at relatively high cost (dams, storage facilities, agricultural and food industries, etc.).

**76 Factors curbing growth.** These factors relate essentially to the savings ratio, the capital/output ratio and population growth. Several examples of slackening-off in the growth process can be quoted. They may be due to an inadequate savings ratio, which is itself due to low incomes but also to prestige consumption with its zero-effects on development, transfers abroad of domestic savings, unsuitable fiscal policies, etc.

Historically, savings have often been used to build tombs, castles and places of worship: it is true that prestige spending of this kind has contributed to the enrichment of the heritage of mankind, but its effect on economic growth is more questionable. At the present time, some privileged people in the developing countries continue to spend in this way and combine the enjoyment of luxury goods supplied by industrial societies with the cheap goods and services underdeveloped societies can offer, such as large numbers of domestic servants, spending constituting the foundation of their social standing and bearing witness to their power.

Another factor curbing development is when individuals hold fast to created wealth, or else transfer it to other countries with no marked effect on the economic growth of the producer country.

The economy may also be held back by misdirected use of available savings through the selection of unsuitable investment projects, so that the growth rate which ought to be possible with better management or resources cannot be achieved. Spectacular or prestige investments may have low or zero marginal efficiency. If production in a low-income society does not rise at a rate higher than population growth, the economy stagnates and the savings ratio is nil or very slight. This growth in production may be due to many factors, including insuitable socio-economic structures, and hence a change in structures may be a prerequisite if production is to achieve a higher growth rate than population and thereby permit capital accumulation.

## Internal structures of the less-developed countries

77 **Socio-economic structures and forms of organization.** Depending on their socio-political philosophy, countries can be placed in three main categories which are known by one or other of the following names: developed countries with a market economy (DC(M)s) or capitalist countries, developed countries with a planned economy (DC(P)s) or socialist countries, and less-developed countries. These three categories have differing socio-economic systems but usually combine government planning and the free play of market forces in pursuing their development process. Table 20 shows the distribution of these countries and their relative importance in terms of area and population.

It is quite obvious that the creation of production capacity and the setting in motion of the development process depend on the suitability of the socio-economic systems involved and on an effective institutional network.

In many LDCs, the initiative for development comes mainly from the State, which plays a decisive part in defining the objectives and the means to be applied: negotiation of foreign loans, financing and implementation of infrastructure projects, promotion of development, and so on. This type of situation is often described as State capitalism. It is a situation in which production relations are those of capitalism, with its wage-earning labour force, but where the State often takes the initiative for creating the means of production and sometimes owns them. The structure and role of the State, in relation to the over-all socio-economic structure, the competence of government departments, etc., has therefore to be assessed from the standpoint of the country's ability to engineer a real process of development.

In any socio-economic system, institutions that are unsuited to the functions required of them can hold back development. These institutions include agrarian régimes, unsuitably organized markets and banking systems, badly designed tax systems and short-comings in the administration of public finances.

The over-all economic structure can be characterized by a number of basic parameters in regard to the relative importance of the premonetary and monetary sectors, the main economic sectors, material production, basic supplies of primary products, etc.

TABLE 20. Distribution of countries by socio-economic systems, in 1968

| | Area | | Population | |
|---|---|---|---|---|
| | km.$^2$ | Percentage | In millions | Percentage |
| Socialist countries [1] | 35,208 | 26 | 1,137 | 33 |
| Developed capitalist countries [2] | 31,329 | 23 | 671 | 19 |
| Less-developed countries (LDCs) [3] | 69,330 | 51 | 1,675 | 48 |
| World | 135,767 | 100 | 3,483 | 100 |

1. U.S.S.R., Eastern Europe, China, Democratic People's Republic of Korea, Democratic Republic of Viet-Nam Mongolia, Cuba.
2. United States, Canada, Europe, Japan, Israel, Australia, New Zealand.
3. Not including underdeveloped socialist countries: Latin America (except Cuba), Africa, Asia (except Japan and Israel), Oceania (except Australia and New Zealand).

*Source:* United Nations, *Statistical Yearbook 1969*, Table 16, New York, N.Y., United Nations, 1970.

The relative importance of the premonetary sector, which essentially corresponds to agriculture, has already been mentioned, together with its relative decline as the development process gets under way.

Economic development has to be founded on the growth of material production (agriculture and industry), directed towards satisfying basic needs for food, clothing, housing, household requirements, etc. It is true that development is not merely confined to material growth, but growth is nevertheless the foundation on which education, public health and other services offering protection to the population can be built. Where these services are of high relative importance in DCs this is a sign of their development, whereas in the LDCs it really corresponds to over-inflation of the tertiary sector due to low incomes and underemployment. The large number of people employed in government and domestic services in the LDCs is rather the fruit of a drive to mop up underemployment (work in government departments) or the result of low wages (domestic service). However, a somewhat higher proportion of services can be justified in some countries by the growth of tourism and, in some cases, of transit trade.

In most of the LDCs, agriculture accounts for a large part of GDP and an even larger part of material production. The agricultural population often represents more than 50 per cent of the total labour force in the LDCs compared with often less than 10 per cent for the industrial sector (9 per cent in Asia and Africa, 13 per cent in Latin America). [2, p. 39].

It is understandable that the under-industrialized LDCs should be concerned about the preponderant place occupied by agriculture and the very limited part played by industry and should be making efforts to develop the industrial sector. However, experience has shown that, in most cases, agriculture has to be transformed and its productivity increased before industry can grow.

The replacement of biological energy by mechanical energy and the growth of the energy available *per capita* are important features of the growth of production capacity and improvements in the quality of life (e.g. rural electrification). 'Certainly one of the most characteristic differences between the more developed and less developed parts of the world lies in energy consumption' [2, p. 76]. In 1960, *per capita* energy consumption was less than 500 kg coal equivalent in the LDCs, whereas it amounted to 8,000 kg or sixteen times more, in the DCs.

**78 Structural heterogeneity.** As we have already stressed several times, structural heterogeneity is one of the basic features of the LDCs. As a result, forms of socio-economic organization, institutions, economic structures and the prevalence of modern means of production vary from sector to sector as do levels of productivity.

The historical process in the LDCs has resulted in the co-existence of an 'implanted' sector, which tends to be semi-capitalistic in form, and an indigenous sector, which has preserved many traditional forms but which has been altered to some degree in its organization and in the extent to which it has been commercialized. Production methods have been improved in the commercialized sector.

This dualism ultimately tends to take the form of opposition between the 'modern' sector and the 'traditional' sector. The modern sector has reached the stage of progressive production, i.e. it is perfecting its methods and achieving relatively high labour productivity, while the traditional sector remains very slow-moving, with low or very low labour productivity.

Thus, in some cases, modern production has been adopted by an 'indigenous élite', or else the LDCs have modernized their economies by taking their inspiration from the techniques of the advanced countries: the example of Japan is particularly striking.

The existence side by side within a national economy of an advanced sector with high productivity and a backward sector with low productivity is a general phenomenon which can be seen to a greater or lesser extent in all countries of the world. According to W. W. Rostow's expression, a country only reaches the stage of economic maturity when most sectors, including agriculture, are at the high productivity stage.

One of the fundamental characteristics of the LDCs is that the modern sector, with its relatively high productivity, is usually the outcome of Western penetration, whereas the so-called 'backward' sector has its roots in the precolonial traditional economy.

In the final analysis, underdevelopment is very often characterized by a structure of the following type:

1. A modern sector, capitalist in form, Western in origin, concentrating on foreign markets and enjoying relatively high labour productivity (plantation agriculture, mining, other industries).
2. A traditional sector, pre-capitalist (or pre-socialist) in form, descended from precolonial traditional societies (Africa and Asia) or partly implanted by Western penetration (semi-feudal system in Latin America). This sector is more concerned with the domestic market and labour productivity is relatively low.
3. The virtual absence of economic flows between these two sectors (inarticulated economy). However, the traditional sector often serves as a pool of resources, especially of labour, for the expansion of the modern sector.

As a result, any attempt to represent the economy as a whole is not very meaningful and there are marked internal disparities in productivity.

**9 Income disparities.** Income disparities go hand in hand with structural heterogeneity and disparities in productivity. The main factors responsible for income disparities are the distribution of property and of land ownership in particular, the uneven distribution of land, the unemployment rate and wage inequalities.

According to estimates made in the 1960s in the three largest countries in Latin America, and in India and the Philippines, about 40 per cent of national income was in the hands of 10 per cent of the population [2, p. 37]. In Latin America, according to the estimates of the Economic Commission for Latin America (ECLA), 5 per cent of the population received one-third of the total income and 30 per cent of the consumer goods, while 50 per cent received 16 per cent of the total income and less than 20 per cent of the consumer goods. The consumption gap was much higher for services and manufactures than for food commodities.[1]

In agricultural economies, the distribution of wealth corresponds closely to the distribution of land. In Latin America, 10 per cent of the population possesses virtually 90 per cent of the arable land [2, p. 37]. The agrarian reforms now under way in several countries are beginning to remove these flagrant inequalities (see Part II). About 40 per cent of all agricultural holdings in Argentina and Chile, two-thirds of the holdings in Colombia and almost 90 per cent of the holdings in Ecuador and Peru are considered too small to provide a decent living for a family [2, p. 37]. In addition, in some overpopulated regions, especially in Asia, there is a serious shortage of farmland.

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[1] ECLA, *The Process of Industrial Development in Latin America,* p. 124, New York, N.Y., United Nations, 1966.

The unemployment rate is another important factor in uneven income distribution but it is virtually impossible to measure it properly from the statistics available at present. The problem of 'full employment' or, less ambitiously, that of reducing the unemployment rate, is one of the fundamental objectives of the LDCs. Yet in many countries high population growth, the drift to the towns and the excessively slow rate at which non-agricultural jobs are created push this rate up instead of down.

Besides visible unemployment which is declared and can be observed there are many forms of underemployment or 'disguised' unemployment. The precise extent of this type of unemployment can only be determined by far-reaching surveys. In agriculture, disguised unemployment (of a permanent and, above all, seasonal character) is often very high.

Underemployment of labour capacity, as a result of visible or actual unemployment, and the low efficiency of labour, which is bound up with the workers' technological level and the equipment available to them, largely account for the disparities in labour productivity.

In addition, as the development process advances, the volume of wages increases and wages tend to become the main or exclusive source of income for the mass of the population.

In the LDCs, the volume of wages represents about 50 per cent of the national income, compared with 70 per cent in the more advanced countries. But the relative volume of wages is also linked to the mode of social organization of production and, although it may not be more than 30 per cent in countries where craft-based agriculture is still important, it can be as much as two-thirds in countries where mining or plantation agriculture play an important role (e.g. Panama, 80 per cent; Netherlands Antilles, 72 per cent; Guyana 65 per cent) [2, p. 36].

**80 Income disparities and disparities in savings and consumption.** Income disparities can have many consequences for the volume and structure of consumption and savings.

Populations living at the minimum subsistence level have to spend all their income on consumption and their savings are slight or non-existent.

The contrast is very marked between high-income categories—consuming imported products, spending on prestige goods, combining the advantages of underdeveloped societies (a wide range of services owing to low wages) and those of developed societies (import of motor vehicles and of household appliances, travel etc.)—and the living standards of those who live in shanty towns, who exist in a subsistence economy, who have part-time jobs, who earn low wages, etc.

It is obvious that savings are generated primarily by the high-income category and hence that the volume of savings and their ultimate destination play a decisive role in the development process. If the privileged category exports part of its income, builds luxurious houses and places of worship and invests very little in material production, capital accumulation will come to a halt. Contrary to the assumption that a high-income category can promote development, 'the concentration of income in low-productivity economies does not result in a cumulative movements of growth but in static inequalities in the consumption of the different social groups'.[1]

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[1] Furtado, op. cit., p. 66.

The growth of labour productivity depends on capital accumulation. In the long run, these two phenomena are closely linked. Hence the growth of labour productivity depends on the mechanisms of savings and investment.

Growth of productivity is a necessary but not sufficient condition for a long-term growth process: in addition, the growth of productivity has to be accompanied by the growth and diversification of demand. This entails creating distribution mechanisms and social structures that will prevent wealth from being concentrated at one pole and poverty at the other, a result which would eventually obstruct the process completely.

Thus investment, productivity and distribution are three basic aspects of the theory of growth and development.

## Relations between developed and less-developed countries

**81 Introductory considerations in regard to method: the balance of payments.** A fourth line of approach in the analysis of underdevelopment is to consider the relations between the DCs and LDCs. This presupposes familiarity with the accounting system which records all monetary relations with the outside world, namely the balance of payments.

TABLE 21. Balance of payments

| Transactions | Item | Foreign exchange — | Foreign exchange + | Balances |
|---|---|---|---|---|
| A. Goods and services | Import of merchandise | — | | Balance of trade (1) |
| | Export of merchandise | | + | Balance of services (2) |
| | Services received | — | | |
| | Services rendered | | + | |
| | TOTAL | — | + | Balance of current transactions (1) + (2) |
| B. Unrequited transfers | Amounts provided | — | | Balance of transfers |
| | Amounts received | | + | |
| C. Capital movements | Loans and investments | | | |
| | to abroad | — | | Capital balance |
| | from abroad | | + | |
| | TOTAL | — | + | Accounting balance of payments A + B + C |
| Reconciliation of outstanding balance of payments | Reduction in exchange reserves | — | | |
| | Increase in exchange reserves | | + | |
| | | 0 | | General balance of payments |

(—) Foreign exchange outflows. (+) Foreign exchange inflows.

International transactions are settled by international means of payment, i.e. facilities which are acceptable to the participating countries. These means of payment are known as foreign exchange. Some transactions, such as exports, give rise to inflows of foreign exchange while others, like imports, give rise to outflows. In Table 21, inflows are represented by the sign + and outflows by the sign −. Foreign exchange may consist of currencies that all countries accept for international payment purposes, such as the United States dollar, or which are acceptable to countries within a monetary area, like the franc or sterling areas, or else it may consist of gold, which is a universally accepted means of payment.

Exchange reserves i.e. reserves of international means of payments, are held by the authorities (official reserves) or constitute private reserves held by private banks, approved agents and private individuals. In most countries, the authorities hold the greater part of the exchange reserves. A fall in reserves can have serious economic consequences, particularly by affecting the import of capital goods and thus holding back development. But there may be many other consequences, as an analysis of the balance of payments can show.

The balance of payments shown in Table 21 is based on the practice of the International Monetary Fund (only the most important items are given).

Transactions in goods and services cover the import and export of merchandise and services received and rendered. Transactions involving flows of services include freight (freight paid to foreigners, freight paid by foreigners), insurance (premiums and claims received or paid), travel (nationals travelling abroad, foreigners travelling in the country), income from labour (nationals working abroad, foreigners working in the country) and income from capital (income received from, or paid on account of, investments).

To make analysis easier, a distinction can be drawn between a trade balance or balance of transactions in merchandise, a balance of transactions in services and lastly a balance of current transactions, which covers the two.

Transfers are transactions without requital, such as technical assistance transfers by scientific and religious organizations, etc.

Capital movements cover long-term or short-term loans, as well as investment. The capital transfers involved in foreign investment generate foreign exchange but may be followed sooner or later by movements in the opposite direction if and when the income produced by the investment is transferred. The (net) balance of capital movements gives the capital balance. The accounting balance of payments covers the balance of current transactions, the balance of transfers and the capital balance. If this balance shows a deficit, the difference has to be taken out of the foreign exchange or gold reserves. If these reserves have been exhausted, exceptional foreign aid in the form of grants or loans is essential to restore the balance of payments to equilibrium. If the balance is positive, the exchange reserves increase and the balance of payments situation improves. The general balance of payments always breaks even. But this state of equilibrium is obtained by varying the foreign exchange stock or by having a foreign debt.

**82 Balance of payments deficit.** Most of the underdeveloped countries show a chronic deficit of their balance of payments. The foreign exchange deficit is due to the interaction of the different component parts making up the balance of payments, such as flows of goods, services and capital.

The developed countries often offset the deficit in their commercial balance (due to imports being higher than exports) by means of the income from their foreign investments. This is what the Western nations did in the nineteenth and early twentieth centuries.

In the underdeveloped countries, the balance of payments can only be stabilized by means of a policy designed to promote exports, develop tourism and, possibly encourage temporary migration.

The shortage of foreign exchange may be temporarily remedied by having recourse to foreign capital. But if the money is borrowed, countries have to bear the annual debt servicing burden which consists of annual repayments (amortization of the debt over the period of the loan) and interest on the outstanding loan. And, in many developing countries public and private borrowings guaranteed by the State have grown more quickly than exports in recent years.

There are several reasons for this 'extraordinary' growth of the foreign debt: the policy of accelerated growth, the low level of domestic savings, inadequate exports, the reduction in the flow of private capital for direct investment in the developing countries, and changes in the terms of trade.

Direct investment in the LDCs, in the form, say, of the construction of a factory by foreign interests, leads to an inflow of capital goods or foreign exchange (purchase of capital goods within the country to build the factory) but part of the income produced by the factory is re-exported and leads to an outflow of foreign exchange.

It can clearly be seen from the foregoing analysis that the future prospects of the underdeveloped countries depend on their ability 'to produce foreign exchange', by supplying goods or services. This governs their ability to import goods that are fundamental to their growth, but which they are not in a position to produce in the near future. The import capacity or international purchasing power of the underdeveloped countries depends to some degree on the structure of the international market.

### *Structure of international trade*

83 **Historical background.** International trade increased sharply in the nineteenth century, in step with the industrialization of Europe. 'Between 1820 and 1900, industrial production in Western Europe increased some 30 times and world trade about 31 times.'[1] This expansion of international trade was made possible by the development of transport facilities and the considerable reduction in transport costs. Smith and Ricardo, writing at the beginning of the nineteenth century, evolved the theory of the international division of labour, whereby it was in the interest of nations to specialize in the production of goods and services for which they enjoyed relative advantages on account of their geographical position, their natural resources, their experience, the relative cost of the primary inputs, etc.

This fundamental principle of the international division of labour cannot be questioned, but it is not exactly mirrored in the actual structure of international trade. This structure also results from the advanced character and power of the Western economy which eventually had the effect of gearing production in the LDCs to its own needs and, through the interplay of international competition, relegated the LDCs to a position where they merely supply raw materials and foodstuffs.

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[1] M. Falkowski, *Les Problèmes de la Croissance du Tiers Monde*, p. 143, Paris, Payot, 1968, 221 p.

TABLE 22. Structure of international trade

A. Distribution, by types of goods, of international trade for all the less-developed countries, in 1965 (percentages)

| | Imports | | Exports | |
|---|---|---|---|---|
| *Primary products* | *32* | | *82.4* | |
| Food | | 16 | | 28.2 |
| Raw materials | | 7.1 | | 21.8 |
| Fuels | | 8.9 | | 32.4 |
| *Finished products* | *66.5* | | *17.3* | |
| Chemicals | | 9.1 | | 1.5 |
| Machinery and equipment | | 30.7 | | 1.1 |
| Other manufactures | | 26.7 | | 14.7 |

*Source:* P. Bairoch, *Diagnostic de l'Évolution Économique du Tiers Monde. 1900–66*, p. 130, Paris, Gauthier-Villars, 1967.

B. Trade between the LDCs and DCs (1967–69) and average rate of growth between 1959–61 and 1967–69 (percentages)

| | Distribution of exports | Annual rate of increase |
|---|---|---|
| Food | 23 | 3.5 |
| Raw materials | 19 | 2 |
| Fuels | 32 | 10.2 |
| Manufactures | 19 | 13.0 |
| TOTAL | 100 | 6.8 |

*Source:* United Nations, *World Economic Survey, 1969–1970*, Table 48, p. 137, New York, N.Y., United Nations, 1971. 248 p.

*Note.* Exports from the LDCs are characterized by the marked predominance of primary products. However, during the last decade, exports of manufactures have risen sharply, while the growth rate for raw materials and food has been particularly low.

Table 22 shows that this structure still exists at the present time. The LDCs are chiefly exporters of foodstuffs and industrial raw materials and are importers of finished products, notably of machinery and equipment. This situation has its origins in geographical factors (tropical agricultural produce) and in historical circumstances (the process of penetration and development by the Western economy).

Hence the LDCs sell primary products and are further handicapped by the fact that they often only have one or two products to sell and deal with a limited number of main buyers, and sometimes even only one.

Table 23 shows the geographical structure of world trade in 1968 and the way in which this trade is polarized. International trade is particularly active between the DC(M)s, active between the DC(P)s and slight between the LDCs: exports by the LDCs to each other represent only 21 per cent of their total exports, while they export 74 per cent to the DC(M)s and relatively little to the DC(P)s.

The geographical polarization is also highlighted by the destination of exports from the LDCs: Latin America exports chiefly to North America and Europe, and Africa to Europe, although South-East Asian exports are rather better distributed. The same applies to exports from the DCs to the LDCs: North America exports mainly to Latin America and South-East Asia, the European Economic Community (EEC) to Africa, and Japan to South-East Asia.

Owing to the structure of international trade, the economies of the LDCs are inevitably dependent on the growth of the DCs' manufacturing industries and food requirements. In addition, their internal development process is conditioned by their imports of capital goods.

International trade also owes its structure to the relationships existing between markedly different forms of socio-economic organization (capitalism, socialism and others). International trade in primary products is dominated by a small number of large international firms which, because of their power, can influence the conditions governing such trade in many ways.

Marxist analysis lays stress on two theories: that of the historical process of polarization of the world, in which the highly industrialized Western pole turns peripheral countries into producers of foodstuffs and raw materials, and that of unbalanced trade, according to which the greater mobility of capital, as against the relative immobility of labour, makes it possible, by the transfer of capital, to take advantage of particularly low wages and produce—and export—large surpluses.

TABLE 23. Geography of international trade: exports in 1968

A. International trade: distribution between LDCs and DCs

| Exports from | Exports to |  |  | Total |
|---|---|---|---|---|
|  | DC(M)s | DC(P)s | LDCs |  |
| DC(M)s | 75 | 4 | 21 | 100 |
| DC(P)s | 41.5 | 46.5 | 12 | 100 |
| LDCs | 74 | 5 | 21 | 100 |
| World | 69 | 11 | 20 | 100 |

B. Exports from LDCs to DC(M)s

| Exports from | Exports to |  |  | Total |
|---|---|---|---|---|
|  | North America | Europe | Japan |  |
| Latin America | 51 | 41 | 8 | 100 |
| Africa | 10 | 85 | 5 | 100 |
| Middle East | 7 | 68 | 28 | 100 |
| South-East Asia | 41 | 34 | 25 | 100 |

C. Exports from DC(M)s to LDCs

| Exports from | Exports to |  |  |  | Total |
|---|---|---|---|---|---|
|  | Latin America | Middle East | South-East Asia | Africa |  |
| North America | 47 | 10 | 35 | 8 | 100 |
| EEC | 25 | 19 | 19 | 37 | 100 |
| Japan | 11 | 8 | 67 | 14 | 100 |

*Source:* United Nations, *Statistical Yearbook 1969*, Tables 142, 143, New York, N.Y., United Nations, 1970.

There seems no doubt that 'the place of each country in the international division of labour is determined by its degree of development, its productive forces and its social relations'.[1]

It follows that the present international division of labour can only be changed by a growth in domestic productive forces and the initiation in the LDCs of processes geared to national objectives.

**84 The terms of trade.** The prices of primary products may vary by as much as 100 per cent. There are several reasons for this instability: good or bad harvests affect agricultural prices, while slight increases in demand in the developed countries lead to steep rises in exports from the underdeveloped countries. For example, owing to the difference in economic scale, a variation of 2 per cent or 3 per cent in the imports of the United States can cause a variation of 20 per cent to 30 per cent in the exports of a supplier underdeveloped country.

These fluctuations make returns on capital uncertain, discourage investment, require corrective action to ensure stabilization, etc.

The problem of cyclical price fluctuations may be heightened by a long-term structural deterioration, manifest in the trend taken by the terms of trade.

The terms of trade are obtained by dividing the unit value of exports by the unit value of imports. If the unit value of exports rises in relation to that of imports, the terms of trade improve. In the opposite case, they deteriorate. In fact, the import capacity of the LDCs depends on the growth in volume of their exports and the evolution of the terms of trade.

In the period 1958–68, the growth of exports at current prices amounted to 9 per cent a year in the DC(M)s and only 6.5 per cent in the LDCs. [2, p. 84]. At the world level, the terms of trade varied very little, although 1958 seemed to mark a ceiling that was never reached again, especially as far as Africa and the Middle East were concerned. In addition, the indices for the unit value of exports rose in the DC(M)s and declined in the LDCs. This is another way of showing that there was some deterioration in the terms of trade. The rise in the index for machinery and equipment was particularly high.

This situation can be explained by the structure of international trade (the exchange of primary products for finished products), the sharp increase in the supply of primary products, the increased competition of synthetics, the low elasticity of demand for primary products compared with manufactures (deterioration of the agricultural and industrial price ratios in Western countries), etc.

There are consequently few grounds for thinking that current trends will eventually correct existing structural imbalances, which are themselves due to market imbalances and to the relations obtaining between countries at very different stages of development and levels of economic capacity. But, as we have already mentioned, any change in these relations can only be brought about by a process of internal development in the LDCs and this process is bound up with the import of capital goods.

**85 International trade in agricultural products and food.** Tables 15 and 22 have shown the particularly important role of agricultural exports in the total exports of the LDCs. Agricultural exports are thus an important source of foreign exchange for these countries. However, the growth of agricultural exports from the LDCs

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[1] Falkowski, op. cit., p. 146.

TABLE 24. Import purchasing power [1] of agricultural exports

| | 1961 | 1963 | 1965 | 1967 |
|---|---|---|---|---|
| Latin America | 100 | 112 | 118 | 112 |
| Far East | 103 | 112 | 107 | 101 |
| Near East | 97 | 113 | 119 | 118 |
| Africa | 104 | 107 | 110 | 101 |
| LDCs | 102 | 111 | 115 | 107 |

1. Percentage ratio of the value index for exports to the average unit value index for imports.

has slackened off in recent years. The increment was only 2 per cent a year in the period from 1955 to 1969, compared with almost 5 per cent for the DCs. Exports of forest products, where the annual increment was 8 per cent, constituted an exception [4, p. 133]. On the whole, the share of the LDCs in total income from agricultural exports declined from 45 per cent in 1955 to 38 per cent in 1969.

This decline is the outcome of the increasing competition which agricultural products and food have to face on international markets because of the growth of Western agriculture, the saturation of demand, the policy of granting export subsidies for surpluses, the protection of Western agriculture, the replacement of agricultural products by synthetics, the low proportion of foreign exchange which the DC(P)s devote to agricultural imports, etc.

The international situation has caused agricultural and food prices to drop. The fall in volume and prices has led to a decrease in income from agricultural exports. In the final analysis, the import purchasing power generated by agricultural exports has been reduced in recent years owing to the fall in export income and the rise in the cost of imported products (Table 24).

In addition, the differing growth rates for population and food production have been responsible for an increase in food imports in many countries. Between 1955 and 1966. the volume of imports of the LDCs almost doubled: imports of cereals have increased sharply. From being net exporters of cereals, the LDCs have become large net importers [4, p. 132].

For reasons to do with the internal development of the LDCs, as a result of population growth and the increase in *per capita* income, and with the international situation, the role of agriculture as a 'producer of foreign exchange' is becoming increasingly fraught with difficulty. This situation obviously has serious consequences for both the standard of living (nutrition levels) and the development process (import capacity).

**86 Food aid.** Assistance provided in the form of food should help to improve the nutrition level and to reduce the trade imbalance. Bilateral food aid consists of importing food, on concessional terms, chiefly from the United States. As for multilateral food aid, this

> has been available since 1963 through the United Nations/FAO World Food Programme (WFP) and since 1968 under the Food Aid Convention of the International Grains Arrangement of 1967 . . . Since 1954, food aid has ranged between 30 and 45 percent of the total imports of food and feedstuffs of the developing countries. In some individual countries, particularly at times of poor harvests, the proportion has been very much higher [4, p. 132].

Although food aid offers undeniable attractions, the volume involved may sometimes have an adverse effect, as it may induce LDCs to neglect their own agriculture or may even compete with it. The current tendency is for this aid to be better co-ordinated with the LDC's own plans and projects.

### *Transfer of resources and aid policies*

87 **Volume of transfers.** At the beginning of the 1960s, the economically advanced countries undertook to provide the LDCs with financial resources corresponding each year to 1 per cent of their total national income [2, p. 162].

Net flows of financial resources from the DC(M)s to the LDCs for 1962, 1965 and 1968 are shown in Table 25.

Official funds represent the highest proportion of total transfers, although the tendency has been for this proportion to decline. Private resources have risen to a slightly larger extent than official resources, but a more detailed table for the whole 1960s would show that the former fluctuate more than the latter. Transfers of resources have usually consisted of bilateral country-to-country transfers rather than transfers through multilateral institutions (international development aid organizations).

In most instances, public transfers take the form of grants (nearly two-thirds for the decade as a whole) [2, p. 163].

The main flow of private funds is composed of direct investment, i.e. of foreign investment in the economic activities of the LDCs: ' . . . over the decade as a whole, 70 per cent of all private funds going directly or indirectly to the developing countries and 22 % of all transfers (public and private) consisted of private investment ' [2, p. 163].

According to the Pearson Report, accumulated direct private investment (the sum of investments made) by economic sector works out to the figures shown in Table 26.

This table highlights the high proportion of investment in the petroleum and mining sectors, investment which is largely dictated by the needs of the developed countries themselves.

TABLE 25. Net flow of resources from the DC(M)s to the LDCs (in millions of dollars)

| | 1962 | 1965 | 1968 |
|---|---|---|---|
| Official resources | 5,430 | 5,982 | 6,777 |
| Private resources | 2,436 | 3,821 | 5,405 |
| TOTAL | 7,866 | 9,803 | 12,182 |

*Source:* United Nations, *World Economic Survey, 1969–1970*, p. 162, New York, N.Y., United Nations, 1971, 248 p.

TABLE 26. Structure of private investment

| Sector | Millions of dollars | Percentage |
|---|---|---|
| Petroleum | 11,556 | 41 |
| Mining and smelting | 2,709 | 9 |
| Manufacturing | 7,479 | 26 |
| Other | 6,723 | 24 |
| TOTAL | 28,467 | 100 |

*Source:* Pearson, *Partners in Development* (Report), Annex II, p. 376, New York, N.Y., 1969, 400 p.

In the period 1968–69, transfers of resources from the DC(M)s mainly came from the United States (39 per cent), followed by France (13 per cent), the Federal Republic of Germany (13 per cent), Japan (8.7 per cent) and the United Kingdom (6.9 per cent). However, during the period 1961–68, France made the greatest effort *per capita* ($26.7), followed by Switzerland ($25.9) and the United States ($24.1). The target of 1 per cent of GDP was not fulfilled. In the period 1961–68, it was only about 0.73 per cent [2, p. 165].

The DC(P)s increased their aid during the 1960s but it was still significantly lower than that of the DC(M)s. It has been estimated at about $1 *per capita* for the period 1966–70 and about $2.6 for the countries of Eastern Europe alone. 'As a proportion of the estimated gross domestic product, annual commitments average just over 0.2 per cent in Eastern Europe' [2, p. 169].

**88 Evaluation of aid policies.** Aid policies can be evaluated in the light of three basic criteria: the reduction in the shortfall of financial resources in the LDCs, the terms on which financial resources are granted and their effects on the development process proper. The structure of transfers, and notably the proportion of official resources involved, is an important aspect. In fact, private transfers are stimulated by financial attractions and the prospect of high returns, whereas official resources should be transferred in order to meet specific needs, having regard to national development objectives. However, official transfers may sometimes involve merely the disposal of surpluses that are virtually unsellable in the countries of origin

Multilateral transfers through international organizations are often considered to offer the best guarantees for beneficiary countries. The DC(M)s playing the most important role in aid policy make relatively little use of multilateral relations (less than 10 per cent of the aid furnished by the United States and France) and give preference to bilateral arrangements [2, p. 157].

The cost of transfers depends on the grant element and on the terms on which loans are made. The Development Assistance Committee (DAC) established by the advanced countries members of OECD has proposed as a goal that 70 per cent of transfers be in grant form. This target has been achieved by a number of countries, including France and Switzerland.

With regard to loans, DAC has proposed that the interest rate should not exceed 3 per cent for at least eight-tenths of the loan, that the repayment period for this same proportion should be at least twenty-five years and that the weighted average for grace periods should be seven years. Some countries have managed to implement these recommendations [2, p. 168]. But a large number of loans are accompanied by restrictive clauses and are tied, that is linked to purchases in the lending country [2, p. 163].

The Pearson Report puts forward a number of recommendations that are designed to make aid more effective, by eliminating or reducing tied aid, prevailing upon the aid-supplying countries to allow beneficiaries to procure goods and services in the country of their choice, developing the action of multilateral institutions, promoting trade between low-income countries, etc. [3, p. 189–90].

## *The equilibrium of the balance of payments and the public debt problem*

**89 Problems of equilibrium.** The problem of equilibrium can best be illustrated by presenting the balance of payments in the form of a table of foreign-exchange resources and uses (Table 27).

TABLE 27. The balance of payments—main components

| Uses | Resources |
|---|---|
| Imports (goods and services) | Exports (goods and foreign exchange) |
| Income from foreign investments | Foreign investment |
| Debt servicing | Loans |
| Amortization | Official transfers of resources (grants) |
| Interest on loans | |
| Balance (+) | Balance (−) |

In the LDCs, income from foreign private investments can be quite high. Income officially transferred in 1968 amounted to $6,792 million[1] or, to give a more precise idea, roughly the equivalent of the official resources which the DC(M)s transferred to the LDCs in the same year (Table 25).

The second important item is that of debt servicing, comprising interest on outstanding loans and annual transfers for repayments on loans. The size of the debt may vary depending on cyclical factors but, in the LDCs, is usually bound up with structural factors.

As is obvious from Table 27, public debt payments inevitably end by diminishing the LDCs' import capacity.

**90 Indicators of external imbalance.** A number of basic indicators characterizing the situation of the LDCs can be worked out from Tables 21 and 27.

The first indicator concerns the extent to which imports are covered by exports and relates to the equilibrium of the trade balance.

A second, and more meaningful, indicator entails calculating the extent to which imports of goods and services are covered by exports of the same 'commodities' (including freight, insurance, tourism, etc., as well as income from net investment abroad). For most of the LDCs, this indicator shows a deficit [2, table 41, p. 113].

The third indicator shows the extent to which the deficit on current transactions (goods and services) has been offset by transfers of resources (foreign investments, loans, grants). Most of the LDCs have increased their means of payment by these movements [2, p. 112].

The fourth indicator is the 'debt service ratio, which measures the proportion of export earnings preempted for interest and amortization payments on previously incurred debt' [2, p. 112–13]. This proportion may amount to more than 20 per cent for countries borrowing the largest amounts [ibid.]. The fact that debt service payments are rising more rapidly than exports in many countries represents a particularly disquieting situation (see Table 5A in Appendix 2).

**91 Factors curbing or inhibiting development.** The balance of payments, which expresses monetary flows between nations, is of basic importance for analysing such flows. International relations play a major part in the development process but they are inevitably marked by the historical process of development on a world-wide scale and the polarization that has resulted from it. The structure of international trade, which is linked to development inequalities, threatens the import capacity of the LDCs and yet imports are necessary if these countries are to purchase the equipment they need to give impetus to the development process. Transfers of resources, in the form of grants or of loans on concessional terms, are a fundamental aspect of development aid. Though aid of this kind may be accompanied by conditions which restrict the choice or slow down the implementation of national development policies, it does represent an undeniable 'effort' on the part of the DCs, even if it is not always possible to assess its scope accurately. Several economists (Singer and Prebisch, among others) have considered that total financial aid to the Third World scarcely makes up for the net losses due to the structure of international trade.

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[1] *IMF Balance of Payments Yearbook*, Vol. 20 (1969), Vol. 21 (1970).

The growth of the public debt is another disquieting feature in the development of the LDCs.

Fluctuations in primary product prices, the deterioration of the terms of trade, the inadequate degree to which income from foreign investments is ploughed back into the economy, the increasing debt service burden and so on all constitute factors capable of curbing or inhibiting economic development viewed in terms of national objectives. Conferences on international trade—with a view to giving the LDCs improved access to the markets of the advanced countries[1]—and development aid are undoubtedly areas where further efforts must be made, but the LDCs could also consider ways of speeding up the growth of their domestic markets, which are less dependent on international conditions.

## Capacity for development

**92 The concept of a developing country.** In some regards, the concept of 'underdevelopment' is more meaningful than that of the 'less-developed countries', since it suggests a situation in which there is scope for development.

Underdevelopment is characterized by the existence of real or potential resources which could be used for development purposes and are not. This approach, which is based on an analysis of the actual situation of countries and is carried out from the developmental standpoint, is the most 'operational' one. It depends primarily on an inventory of resources that are untapped or have been exploited for purposes other than those of the country's development.

Underexploited resources may include the labour force (considerable underemployment of the labour force in many countries), intellectual ability (low levels of education and information), natural resources (land in underpopulated countries, water for crop irrigation, mining, etc.) and available technical capital (underutilization and malutilization).

Resources and income can be used for purposes other than development, such as income transfers to other countries, purchases by nationals of land vacated on independence, construction of luxury villas, prestige investments and so on.

The term 'underdeveloped countries' therefore characterizes a situation where available resources could be used for development purposes, but are not. The concept of underdevelopment, seen from this angle, itself stems from a dynamic view of development, since it implies that there is development potential. The concept of developing countries implies a process that has already been initiated and whose progress can be measured in relation to the level already reached.

Part II will be devoted more particularly to development processes and the role of agriculture.

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[1] United Nations Conference on Trade and Development (UNCTAD).

# Check test (basic concepts)

| Statements | True | False | Don't know | Subsection |
|---|---|---|---|---|
| 1. The final agricultural production of agriculture is equal to the value added. | | | | 60 |
| 2. The economy of the LDCs is similar in all respects to that of the DCs at the pre-industrial stage. | | | | 61 |
| 3. Over-all underdevelopment can be explained by the size of the agricultural sector in the LDCs and by the low productivity of agricultural labour. | | | | 63 |
| 4. The age-pyramid in the DCs has a narrow base-line. | | | | 68 |
| 5. The coefficient of elasticity of food demand in relation to income is positive. | | | | 70 |
| 6. Over-all economic growth is equal to the savings ratio divided by the marginal efficiency of capital. | | | | 74 |
| 7. In the short term, the establishment of foreign firms helps to ensure that the balance of payments will break even. | | | | 81 |
| 8. Debt servicing is equal to the interest paid on loans. | | | | 82 |
| 9. The international division of labour makes it possible to maximize growth. | | | | 83 |
| 10. The development of a country's import capacity is solely dependent on the terms of trade. | | | | 84 |
| 11. The terms 'underdeveloped country' and 'poor country' are synonymous. | | | | 92 |

## Revision exercises

11. Gross final agricultural production at market prices is equal to 100, current expenditure on agriculture 30, indirect taxes net of subsidy + 8 and amortization 10.
    Calculate:
    (*a*) the gross value added at market prices;
    (*b*) the gross value added at factor cost;
    (*c*) the net product.
12. In a given LDC the birth rate is 4 per cent and the death rate 1.5 per cent. What is the natural population growth rate?
13. Given that the growth rate of total employment is 2.5 per cent and that of the non-agricultural sector is 4 per cent, calculate the growth rate of employment in agriculture, assuming that this sector accounts for 60 per cent of total employment.
14. In an LDC, the growth of the non-agricultural population is 4 per cent and that of *per capita* income 2 per cent, while the coefficient of elasticity of food demand in relation to income is 0.8. Calculate the growth of food demand in monetary terms.
15. In an LDC, the projected population growth is 3 per cent a year and that of *per capita* income 2 per cent. What is the savings ratio necessary to ensure that this projection is fulfilled, knowing that the incremental capital/output ratio is 4 and that all savings are invested?

## Topics for group discussion

1. What are the most fundamental characteristics of an underdeveloped society (indicate the specific society you are discussing)?
2. What are the basic features of agricultural underdevelopment (specify the geographical area you are discussing)?
3. What are the main factors curbing and inhibiting over-all development?
4. What are the main factors curbing and inhibiting agricultural development?
5. Do you think there is any economic justification for instituting a birth-control policy?
6. Can you make an estimate of the possibilities for increasing agricultural production in a given region? What steps would you have to take in order to make such an estimate?

# Part II

# *Agriculture and development*

# Introductory considerations on method
## *Structural representation and process of economic transformation*

**93 Table of resources and uses, by sector.** In traditional economies, agriculture constitutes the main sector of the over-all economy, while industry and services are hardly developed. Experience has shown that with the development process, agriculture declines and industry expands and then subsides, while services experience continuous growth. These historical trends have been analysed more especially by Colin Clark.

In order to analyse the distortion of the national production apparatus, describe and compare situations and on this basis identify and analyse transformation processes, it is necessary to have a structural representation of the over-all economy.

The document most commonly used for this purpose is the table of resources and uses (by sector), which forms part of the system of national accounts.

Table 28, which deals with a developed country, is an example of such a table. It is an extremely simplified one, covering only four sectors: agriculture, agricultural and food industries, other industries, services. It is obvious that normal tables are much more detailed. For example, 'other industries' can be broken down into mining, manufacturing, power, chemicals and so on. The manufacturing industries could themselves be subdivided into textiles, shoes, paper and cardboard, plywood, furniture, etc. The more numerous the sectors, the more complete and useful is the information. Tables of some hundred sectors are normal in certain countries. This very simplified table is, however, sufficient to familiarize us with certain concepts and basic calculations.

The underlying principle in the construction of the table is simple: columns show the resources and rows the uses. In accountancy terms, resources are equal to uses for each sector and for the economy as a whole, as the reader can see.

The table of resources and uses can be broken down into three elementary tables: I, II, and III.

Table I (columns and rows 1 to 5) is a table of purchases and sales, of inter-sector or inter-industry relations. It is also called the Leontief table after the name of its inventor. Sales are shown in the rows, purchases in the columns.

Table 28 shows that the agricultural sector (A) sells nothing to itself (production for own consumption is not shown), that it sells 20 to the agricultural and food industries (AFI), 1 to other industries and 2 to services (hotels and restaurants), i.e. total sales of 23 to other sectors. In order to produce, agriculture buys 2 from AFI (animal and feeding stuffs), 4 from other industries (fertilizer, pesticides, fuel, etc.) and 2 from services, i.e. total purchases of 8. Trade transactions by the agricultural sector can be characterized by means of purchase and sales coefficients: for example, the coefficient of sales by A to AFI is 87 per cent and the coefficient of purchases by A from AFI is 8.5 per cent. A sells much more to AFI than AFI sells to A: we say that the AFI sector is the better customer.

TABLE 28. Simplified table of resources and uses: Theoria model

← Table I → ← Table III →

| Sectors | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | AFI | OI | S | SS | C | GCF | X | FU | TU |
| 1 | A | 0 | 20 | 1 | 2 | 23 | 20 | 0 | 7 | 27 | 50 |
| 2 | AFI | 2 | 0 | 1 | 5 | 8 | 47 | 0 | 5 | 52 | 60 |
| 3 | OI | 4 | 3 | 0 | 15 | 22 | 40 | 80 | 8 | 128 | 150 |
| 4 | S | 2 | 1 | 10 | 0 | 13 | 80 | 7 | 20 | 107 | 120 |
| 5 | PS | 8 | 24 | 12 | 22 | 66 | 187 | 87 | 40 | 314 | 380 |
| 6 | VA | 23 | 20 | 111 | 76 | 230 | | | | | |
| 7 | SP | 31 | 44 | 123 | 98 | 296 | | | | | |
| 8 | I | 9 | 6 | 2 | 2 | 19 | | | | | |
| 9 | TM | 10 | 10 | 25 | 20 | 65 | | | | | |
| 10 | R | 50 | 60 | 150 | 120 | 380 | | | | | |

← Table II

$$\begin{aligned} \text{GDP} &= \Sigma\text{VA} + \text{TM} \\ &= 230 + 65 = 295 \\ &= \text{C} + \text{GCF} + (\text{X} - \text{I}) \\ &= 187 + 87 + (40 - 19) = 295 \end{aligned}$$

*Rows*

1. A = agriculture.
2. AFI = agricultural and food industries.
3. OI = other industries.
4. S = services.
5. PS = purchases by the sector or 'intermediate' consumption.
6. VA = value added.
7. SP = sector production.
8. I = imports.
9. TM = trade margins.
10. R = resources.

*Columns*

1.
2.
3. } See corresponding rows.
4.
5. SS = sales by the sector or 'intermediate' uses.
6. C = consumption.
7. GCF = gross capital formation.
8. X = exports.
9. FU = final use.
10. TU = total use.

*Note.* The table of inter-sector exchanges thus indicates exchanges between the different sectors of the economy. There is no reason why purchases and sales in each sector should be equal; on the other hand, total purchases by all sectors is bound to equal total sales by all sectors (66 in our model).

The '0' diagonal means that production for own consumption is not taken into consideration in accounting. For example, fodder produced and consumed on the farm is excluded.

Table II shows the origin of the resources which each sector has used. Let us consider agriculture, for example. In order to produce, agriculture buys from other sectors of the economy: its total purchases equal 8. It adds a value equal to 23, i.e. in all, a sector production of 31. We find, in another form, the concepts of final agricultural production, intermediate consumption and value added with which we are already familiar (see subsection 60).

Sector production is expressed at the prices paid to farmers and so represents the 'farm' value of agricultural production. Sector production does not represent the aggregate agricultural resources utilized by the nation: imports, calculated at CIF[1] prices, have to be added. Finally in order to arrive at the value of resources at retail prices, we have to include the trade margins applicable to the distribution of products from farms or port of importation to the final user. These margins amount to 10 and the total value of the resources thus equals 50.

---

[1] CIF price = cost + insurance + freight.

Recapitulating:

$$\begin{gathered} PS + VA + I + TM = R \\ 8 + 23 + 9 + 10 = 50. \end{gathered}$$

The reader will find no difficulty in reading the other columns in the table.

With the data set out in the columns we can calculate the input-output coefficients, or the quantity of intermediate goods purchased by sector *j*, from sector *i* needed in order to obtain a unit product of sector *j*, calculated at production or retail prices.

For example, the coefficient for purchases by agriculture from the AFI per unit product of the agricultural sector is equal to $\frac{4}{31}$ or 0.13. These coefficients are a vital factor in the programming of development, as we shall see later.

Sales and purchase coefficients and, more especially, the input-output coefficients enable us to grasp the relationship between production sectors in the development process. The growth of any sector *j* leads to the growth of sector *i* to the extent that *j* needs, in order to produce, goods provided by *i*. The complexity of the development process is seen in the action of the inter-sector relations: it is obvious that agriculture cannot be treated as an isolated sector inasmuch as it is linked to the whole of the economy through its purchases and sales.

Table III (columns 6 to 10, rows 1 to 5) shows the final destination of the goods produced; these can, in fact, be used for domestic consumption (C), for capital transactions in order to increase production capacity (or gross fixed capital formation: GFCF) or, again, for export (X).

In the Theoria model, agriculture sells 23 to other sectors of the economy, sells 20 unprocessed products to the final consumer, does not contribute to gross fixed capital formation (GFCF = 0), for it does not produce capital goods, and exports 7. In all, agricultural products have a value of 50 (expressed at retail prices), a figure identical with that of the corresponding column for resources.

Recapitulating:

$$\begin{gathered} SS + C + GCF + X = TU \\ 23 + 20 + 0 + 7 = 50. \end{gathered}$$

The accounting principle of the table of resources and uses is the balance between resources and use and we have verified this balance for the agricultural sector. If, instead of considering one sector, we look at all sectors as a whole—the over-all economy in fact—we can write as follows:

$$\begin{aligned} & PS + VA + I + TM = R \\ & 66 + 230 + 19 + 65 = 380 \text{ (column 5)} \\ & SS + C + GCF + X = TU \\ & 66 + 187 + 87 + 40 = 380 \text{ (row 5).} \end{aligned}$$

Noting that sales and purchases for all sectors as a whole are (necessarily) equal, we can set this out more simply:

$$\begin{array}{ccc} VA + I + TM & = & C + GCF + X \\ \text{Resources} & = & \text{Uses.} \end{array}$$

On the basis that the gross domestic product equals the sum of the value added figures for the various sectors, including trade margins on production and imports, we can write the following basic equation:

$$GDP + I = C + GCF + X$$

$$GDP = C + GCF + (X - I)$$

$$GDP = 187 + 87 + (40 - 19) = 295.$$

We can check that the GDP is in fact equal to the sum of the values added by the different sectors, including trade margins:

$$GDP = \Sigma VA + TM$$

$$GDP = 230 + 65 = 295.$$

The table of resources and uses is thus an extremely important instrument for purposes of representation and analysis. It also has operational implications as it constitutes an indispensable basis for development planning.

Its scope is much more limited in the LDCs than in the DCs. This is mainly due to the heterogeneous and disconnected nature of these countries' economies. Heterogeneity is linked to the simultaneous existence of a subsistence sector and a monetary sector, a traditional sector and an implanted sector, a capitalist sector and a craft or other sector. In these circumstances average coefficients relating to resources, uses and exchanges have little significance. The disconnected nature of the economy is reflected in the low coefficients in respect of inter-sector exchanges. In the LDCs agriculture buys little other from sectors of the economy whereas in the DCs purchases may represent up to 50 per cent of sector production.

**94 Agro-industrial food production complex.** We shall term agro-industrial food production complex—and, more simply, food complex (FC)—the grouping made up of the agricultural sector and the agricultural and food industries sector in the table of resources and uses.

$$FC = A + AFI.$$

In actual fact this complex is not exclusively concerned with food production, for agriculture and the AFIs as well produce raw materials for other industries, but usually food production plays by far the largest part.

This complex can be characterized, as in the case of the economy as a whole, by coefficients relating to use, exchanges (the input/output ratio) and structure.

From the point of view of final use, agricultural and food products can be placed in two main categories: (a) unprocessed agricultural products, coming from the agricultural sector—these we term raw agricultural products (RAP); (b) processed agricultural products (PAP), coming from the AFI sector.

Table 28 shows that if we confine ourselves to final consumption (column 6) we can write:

$$C = RAP + PAP$$

$$67 = 20 + 47.$$

This situation is characteristic of a developed country—consumption of processed products is higher than that of raw products. Processed agricultural products represent about 70 per cent of product consumption. In the LDCs the proportions are very different, and the consumption of raw products plays by far the larger part.

From the point of view of inter-sector exchanges, we have seen that agriculture sells 87 per cent of its intermediate goods to the AFI and Table 28 enables us to calculate that the AFI buy 20/24 or 83 per cent of their intermediate goods from agriculture. Inter-sector relations are thus very close: the AFI are technically dependent on agriculture (for their input and output), although they may dominate agriculture economically. The economic relations between agriculture and agricultural and food industries depend on the relative structure of the two sectors and, more especially, in a market economy, on the size and power of firms. But the opening up of new markets by the AFI acts as a stimulus on agriculture. In view of these very close relations of technical and economic interdependence between the A and AFI sectors in the DCs, it is obvious that the agricultural economy can be understood and explained only within the context of the food production complex.

In the LDCs the relationship is much less pronounced: subsistence agriculture is relatively important, the proportion of processed agricultural products in urban consumption is smaller, the AFI are more in the nature of cottage industries, etc. However the establishment by international firms of branches in the LDCs can have a great many consequences on the development of their food production economy and the relationship between agriculture and industry.

The structure of agricultural and food production can be represented schematically as follows:

$p$ = purchases by agriculture from other sectors of the economy;
$v$ = value added by agriculture;
$c$ = cost of processing and marketing agricultural products;
$e$ = expenditure by the consumer (and net exports).

$$e = p + v + c.$$

Taking $e = 100$, we can calculate the components of the agricultural and food production economy, i.e. the way in which agricultural and food expenditure by the final consumer is distributed.

This structure differs considerably in the DCs and LDCs and can be illustrated as follows:

| | $p$ | $v$ | $c$ | $e$ |
|---|---|---|---|---|
| LDCs | 5 | 70 | 25 | 100 |
| DCs | 15 | 30 | 55 | 100 |

This table shows that in the LDCs the food production economy is an agricultural economy ($v$ = 70 per cent) whereas in the DCs the non-agricultural sectors receive 70 per cent of consumer expenditure. The proportions are, roughly speaking, reversed and this radical mutation in relation with the development process is one example of the structural transformations that represent the very essence of development.

**95 Classification of sectors.** The table of resources and uses enables us to classify sectors according to the origin of sector production and the destination of products.

Information in the columns enables us to establish the structure of the sector according to the source of the purchased 'input items':

$$SPj = PSj + VAj.$$

Production of branch $j$ = input items purchases + value added.

TABLE 29. Purchases from other sectors (backward linkage) as a percentage of sector production

| | Iraq | Pakistan | Egypt |
|---|---|---|---|
| | 1963 | 1964–65 | 1959–60 |
| Agriculture | 4 | 5 | 8 |
| AFI | 44 | 73 | 60 |

Value added is itself the result of the combined primary inputs from within the sector itself:

$$VA = f(L,K) \qquad L = \text{labour}$$
$$K = \text{capital.}$$

Two basic types of sector can thus be distinguished: those in which purchased inputs predominate and those in which value added or 'factor product' has greater importance.

In the Theoria model the agricultural sector is one in which value added predominates whereas in the food production industries purchased inputs predominate.

Available data for a few countries tend to confirm the general character of this structure. Table 29, based on data supplied by FAO, illustrates this situation.

These differences in structure have a great many consequences: agricultural progress is, on the whole, progress of an internal kind, which depends on improving the productivity of the factors of agricultural production. Moreover, the progress of food production and the cost of the final product depend to a large extent on the efficiency of the agricultural sector. This situation helps to explain why the food industries may be impelled to gain control of the agricultural sector itself, in order to bring the quality of agricultural production into line with requirements and introduce advances that will help to reduce costs (vertical integration), or else to seek to dominate agricultural markets so as to monopolize their supply.

Sectors can also be classified according to the main destination of their products—industries producing intermediate, consumer, capital or export goods.

In Theoria, a model for an industrialized country, agriculture is a sector mainly producing intermediate goods. Agricultural products are processed by the food industries before reaching the consumer. In the LDCs the case is different—agriculture is essentially a producer of consumer goods.

The Theoria model is not sufficiently detailed to allow classification of the other sectors.

The main industries producing intermediate goods are those producing fuels (fossil fuels, gas, petroleum products, etc.), construction materials, glass, iron and steel, chemical products and rubber.

Industries producing capital goods are those manufacturing machinery, electrical and mechanical appliances, motor vehicles and bicycles and the building and construction industry.

Industries producing consumer goods are agricultural and food industries, textile and clothing firms, leather and skins, wood, paper and cardboard, newspapers and publishing firms.

**96 'Triangularization' of the table of inter-sector relations: a further classification of sectors.** A triangular table of inter-sector relations is a table set out in such a way that the sectors are rank-ordered according to their exchange relationships.

TABLE 30. Triangular input-output coefficient matrix, Mali, 1969

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| A | 1. Building and public works | 0 | | | | | | | | |
| | 2. Textiles and leather | | 0 | | | | | | | |
| | 3. Services | 3 | | 0 | | | | | | |
| B | 4. Food industries | | | 2 | 0 | | | | | |
| | 5. Miscellaneous industries | 10 | | 1 | | 0 | | | | |
| | 6. Mechanical and electrical engineering | 3 | 1 | 4 | | | 0 | 1 | | 1 |
| C | 7. Raw materials and semi-manufactures | 17 | 4 | | | | 4 | 0 | | |
| | 8. Agriculture | | | 1 | 31 | 2 | | 11 | 0 | |
| | 9. Energy | 6 | 5 | | | | 1 | 2 | 1 | 0 |

A = basic industries.
B = intermediate industries
C = 'top-ranking' industries.

*Source:* H. Leroux and J. P. Allier, *Fonctions de Production et Modèles*, Paris, Ministère de la Coopération, 1963.

Table 30 shows an application of the 'triangularization' method to the table of input-output coefficients in Mali. This table will enable us to show the economic significance of the triangular arrangement.

This triangular arrangement makes it possible to distinguish three new categories of industry which we will term basic (A), intermediate (B) and 'top-ranking' (C) industries.

Basic industries sell to a great number of other sectors and purchase relatively little: they are technically independent. They constitute the industrial infrastructure on which the processing industry superstructure can be built.

In the case of the Mali economy, energy, agriculture, raw materials and semi-manufactures (metallurgy) constitute basic activities. Agriculture buys relatively little from other sectors and sells to services, to miscellaneous industries, to semi-manufacturing industries and, above all, to the food industries.

Intermediate industries buy from and sell to a relatively large number of other industries. A typical example is the mechanical and electrical engineering industries, which buy raw materials and semi-manufactures. The food industries are shown as intermediate industries but the main stimulus they give is to agriculture, and mechanical and electrical engineering industries have much more important forward and backward linkage effects on the production apparatus as a whole.

Hirschmann has drawn particular attention to the role of the intermediate industries in the development process. These include, apart from the industries already listed in the table, the wood, paper and cardboard industries, and sometimes agriculture. When agricultural production is stepped up, agriculture becomes the customer of a number of other industries including chemical, machine, construction, power, food (animal feedstuffs), etc.

The 'top-ranking' industries sell the totality or quasi-totality of their production for final consumption and thus sell nothing, or virtually nothing, to other industries. On the other hand they buy from the other sectors and generally have a relatively high coefficient of technical dependence. In the Mali economy, building and public works, textiles and leather and services are industries of this type.

The reader must guard against drawing general conclusions from these analyses. The classification of industries depends on the economic structure of the countries in question and even on the nomenclature used. What it is desirable to keep in mind is rather the method and the concepts.

**97 Structural transformations.** The above analyses enable us better to understand the structural transformations that affect an economy in connexion with the development process.

The structure of the over-all economy can be expressed at a given moment in terms of the relative share of the different sectors (the size of each being measured by its value added) in the GDP. Let $\alpha_1, \alpha_2, \ldots \alpha_n$ be these structural coefficients. For example, in the Theoria model (Table 28) the sectoral coefficient of agriculture is equal to: $23/295 \simeq 0.08 \simeq 8$ per cent. In other words, GDPA represents 8 per cent of GDPT.

The various sectors do not expand at the same rate; growth rates are relatively high in the case of certain sectors and relatively low for others. Over-all growth is equal to the weighted average growth of the various sectors that make up the over-all economy.

If $r_1, r_2 \ldots r_n$ are the respective growth rates of sectors 1 to $n$, we can write:

$$r_Y = \alpha_1 r_1 + \alpha_2 r_2 + \ldots + \alpha_n r_n.$$

The structural distortion of the economy is, in fact, the result of the varying growth rates of the sectors, which bring about changes in their relative importance within the over-all economy.

This transformation results more especially from the part played by the 'leading' sectors usually characterized by high growth rates and the way in which they 'entrain' the other sectors, i.e. carry them along in their wake, and transform them. The theory of 'leading' industries will be dealt with when we take up the analysis of development models, in which agriculture will be considered successively as an 'entrained' sector and as a 'leading' sector.

Under the impetus of the 'leading' industries, the internal production apparatus becomes distorted according to rhythms which depend on the relative growth rates. Finally, the various coefficients that characterize the economic structure—of uses, of exchanges, input-output, structure of resources—are changed.

The classification of an industry among the 'leading' or 'entrained' group also changes with time. Agriculture can be a 'leading' sector at the moment of take-off, only to become an 'entrained' sector during the development process. The nature of an industry—basic, intermediate or 'top-ranking'—may itself change as the division of labour becomes organized and inter-sector relations are intensified.

The economic structure of a nation is a historical category which can undergo far-reaching transformations if the forces of development are released.

The analysis of over-all structural transformations is complex and it is convenient and sometimes sufficient to consider simplified two-sector models.

A model that is often used (proposed by Marx) distinguishes industries producing consumer goods and those producing capital goods. In this document we shall often be led to consider two-sector models: agriculture and industry, subsistence agriculture and market-oriented agriculture, etc.

**98 Main questions dealt with in Part II.** Following consideration, in Part I, of the relationship between agriculture and the state of underdevelopment, we shall examine in Part II the relationship between agriculture and the process of development.

Chapter 1 deals with the part played by agriculture in over-all growth. The various forms in which agriculture can contribute to such growth are analysed one by one. Agriculture participates in over-all growth by its own growth, by transfers of resources (labour and capital), by the earning of foreign exchange and, lastly, by contributing to the industrialization process.

Chapter 2 deals with the role of agriculture in bringing development about. Agriculture can contribute to over-all growth in the different ways considered in Chapter 1, but its actual contribution depends on the development model selected.

Reference must be made here to the theories of balanced and unbalanced growth, 'technological options' (alternative methods of development) and 'leading' (or key) sectors in development. Various reasons are put forward why priority should be given to agriculture or to industry respectively, and there is some interest in comparing them. This line of reasoning does not, when all is said and done, lead very far. Development derives necessarily from a relationship between agriculture and industry which is 'adjusted' or attuned by the operation of the development process itself. However, agriculture—or industry—can play the part of a 'leading' sector or of a sector that follows suit or 'adjusts'. If agriculture is to play the part of a leading sector, it must be able to create a 'surplus' representing the basic economic resources for 'feeding' that development process.

In Chapters 1 and 2 we have assumed that countries are implementing an agricultural development strategy that defines the role of agriculture in the development process, making it possible to adjust agricultural production and transfers of resources on the basis of the functions that agriculture is to assume in this process.

In Chapter 3 we analyse agricultural development strategy in itself. What is important is the transition from traditional agriculture to up-to-date agriculture. This transition does not imply merely technological revolution but, more often than not, a social transformation process which may even be a prerequisite for the creation of a new and progressive type of agriculture, able to fulfil its function within the development process.

Chapter 4 examines what happens as the development process that has been initiated proceeds on its course, and as the economy moves towards maturity and mass consumption. Agriculture declines in the over-all economy and its methods and socio-economic structures change. These concluding sections are in general outline terms and only basic trends are dealt with. The point of reference here can only be to the developed countries and we have deliberately confined ourselves to the Western model. This last chapter will be taken up and developed in a further publication as it is not possible to deal with it here as fully as it warrants.

# 1

# *The contribution of agriculture to growth*

**99 Basic contributions.** Agriculture's chief contributions to over-all economic growth may be classified as follows:

1. Contribution to over-all economic growth, through growth of agricultural and food production, in line with the growth of internal and external demand.
2. Contribution through the transfer of resources (labour and capital) from agriculture to the other sectors of the economy, transfers which contribute to the over-all growth if (and only if) the productivity of the transferred factors is higher in the non-agricultural sectors.
3. Contribution to the earning of foreign exchange and to a stable balance of payments, in so far as agricultural and food exports exceed imports. The currency earned by net exports can make it possible to import capital goods needed for the modernization of the economy.
4. Contribution to industrialization either through the provision of raw materials to the agricultural and food industries or through the purchase of industrial goods, thus stimulating industrial growth.

In this chapter, we propose to give an over-all view of the contributions which agriculture can make to growth.

## The contribution of agriculture to over-all economic growth

**100 Over-all economic growth and agricultural growth.** The rate of growth of agriculture has an effect on over-all growth the magnitude of which depends on the proportion of GDPT represented by GDPA. If we imagine a simple model with two sectors (agriculture and industry), over-all economic growth is equal to the weighted average economic growth of agriculture and industry.

Let $\alpha_a$ and $\alpha_i$ be the relative size of the values added by agriculture (a) and industry (i) in GDPT, and let $r_a$ and $r_i$ be the respective growth rates of agriculture and industry. Over-all economic growth ($r_Y$) is then expressed:

$$r_Y = \alpha_a r_a + \alpha_i r_i.$$

In the LDCs, the GDPA represents about 40 per cent of GDPT which means $\alpha_a = 40$ per cent and $\alpha_i = 60$ per cent. In the DCs agriculture's share is most frequently less than 10 per cent and sometimes less than 5 per cent.

Generally speaking, the growth of non-agricultural production is higher than that of agricultural production. Let us suppose, as often seems to be the case, that the rate of growth of industrial production is twice that of agricultural growth

$r_i/r_a = 2$, and that these rates are the same in LDCs and DCs. The weighted average over-all growth in these two groups of countries is respectively as follows:

$$\alpha_a r_a + \alpha_i r_i = r_Y$$
$$\text{LDCs}: 0.4 \times 3 + 0.6 \times 6 = 4.8$$
$$\text{DCs}: 0.1 \times 3 + 0.9 \times 6 = 5.7.$$

As agriculture is a sector which grows relatively slowly, the over-all growth rate is lower as the share of agriculture in the total is greater. Agriculture certainly contributes to over-all growth by its own growth and, historically speaking, an annual growth rate of 3 per cent in agricultural production over a long period of time is a new event of great significance. Nevertheless, the preceding calculations tend to show that agriculture curbs over-all growth. This gives rise to the frequently expressed wish to give priority to rapid-growth sectors and to reduce the importance of agriculture by expanding the process of industrialization.

This attitude can lead to the neglect of agriculture, and experience shows that in many cases this can have serious consequences. An insufficient growth rate for agriculture can slow down or obstruct development as we shall explain later.

**101 The relative decline of agriculture.** Let

$$Y r_Y = Y_a r_{Y_a} + Y_i r_{Y_i}$$
$$\Delta Y = \Delta Y_a + \Delta Y_i$$

where Y, $Y_a$, $Y_i$ = GDPT, GDPA and GDPI (GDP of industrial origin) respectively and $r_Y r_{Y_a}$, $r_{Y_i}$ = the growth rates of Y, $Y_a$ and $Y_i$ respectively.

Dividing the last equation by $\Delta Y$, we have:

$$\frac{\Delta Y}{\Delta Y} = \frac{\Delta Y_a}{\Delta Y} + \frac{\Delta Y_i}{\Delta Y} = 1.$$

Let us call the variation of GDPA in relation to GDPT the marginal structural coefficient of agriculture. We can write:

$$\alpha'_a = \frac{\Delta Y_a}{\Delta Y} = 1 - \frac{\Delta Y_i}{\Delta Y}.$$

Expanding and simplifying, we have:

$$\alpha'_a = \frac{1}{1 + \dfrac{Y_i r_i}{Y_a r_a}}$$

This formula shows that the marginal structural coefficient of agriculture diminishes if the weighted industrial growth rate is higher than the weighted agricultural growth rate.

If this process continues, reduction of the marginal coefficient leads to a reduction of the average coefficient. The experience of the DCs, and the shorter experience of the LDCs, confirms that this occurs in relation with over-all growth. The share of industry thus increases, and this decline of agriculture leads to a more rapid growth in the over-all economy in so far as $r_i$ is greater than $r_a$, which experience shows to be the case.

This conclusion, which is both experimental and mathematical, should not lead to naïve proposals being put forward. The growth of agriculture is vital for the process of development, even if the objective is the industrialization of the economy.

## The supply of resources to the other sectors of the economy

### *Transfer of workers*

**102 Reduction of the agricultural population.** In relation to the process of development, agriculture constitutes a reserve of manpower on which the other sectors of the economy draw to meet their needs.

Adam Smith, writing at the beginning of the nineteenth century, already foresaw the importance of the growth of labour productivity in the development process:

> When by the improvement and cultivation of land, the labour of one family can provide food for two, the labour of half the society becomes sufficient to provide food for the whole. The other half, therefore, or at least the greater part of them, can be employed in providing other things, or satisfying other wants and fancies of mankind.[1]

These predictions have today been surpassed many times over, since one family of farmers in the most advanced countries can feed up to twenty urban families. It has been possible to reach this point, however, only after a long process of technical progress and social change.

In the LDCs, which are still in a period of stagnation or at the start of the development process, the situation is quite different. To demonstrate the relationship between economic growth and the transfer of workers, we shall examine a simple model.

The growth of over-all employment is equal to the growth of weighted sectoral employment. Let us suppose that the proportion of industrial employment is $\alpha_i$. The proportion of agricultural employment is then: $1 - \alpha_i = \alpha_a$ and the growth of employment ($r_N$) is expressed:

$$r_N = \alpha_i r_{Ni} + \alpha_a r_{Na}. \tag{1}$$

In so far as agriculture is a reserve of manpower on which industry can draw to satisfy its needs, the agricultural population has to a certain extent a residual nature. The variations in agricultural employment can be deduced from formula (1):

$$r_{Na} = \frac{r_N - \alpha_i r_{Ni}}{\alpha_a}. \tag{2}$$

According to this formula, there are three basic cases to be considered:

1. The growth of industrial employment ($\alpha_i r_{Ni}$) is lower than the growth of over-all employment ($r_N$) (agricultural employment is increasing).
2. $r_N = \alpha_i r_{Ni}$ (agricultural employment is stagnant).
3. $r_N < \alpha_i r_{Ni}$ (agricultural employment is on the decline).

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[1] A. Smith, *The Wealth of Nations*, quoted in: 'Agriculture in Economic Development', *Monthly Bulletin of Agricultural Economics and Statistics*, February 1964.

TABLE 31

| | $r_P$[1] | $a_I$ | $r_{NI}$ | $r_{Na}$[2] |
|---|---|---|---|---|
| LDC (1) | 2.5 | 0.3 | 3 | 2.3 |
| LDC (2) | 2.5 | 0.3 | 6 | 1 |
| DC (3) | 1 | 0.8 | 2 | −3 |

[1] It is assumed that the demographic growth and the growth of the working population are identical in all sectors.
[2] This last column is obtained from formula (2).

It is important to note that the growth of employment ($r_N$) may be lower than the growth of the working or economically active population ($r_{Pa}$). In this case, underemployment increases either in the form of visible urban unemployment or in the form of visible or disguised agricultural unemployment.

We shall clarify this analysis with some examples.

Let us consider countries whose situations are as indicated in Table 31.

In the first case, the growth of industrial employment is greater than that of the working population and industry must thus take on workers, whom it can only find in agriculture. There exists then a demand for the transfer of agricultural workers to industry. Nevertheless, seeing the relatively small size of industry, these transfers are not considerable. The agricultural population increases at a rate of 2.3 per cent per year, close to the figure for demographic growth. In these circumstances, the agricultural population increases in absolute terms, although falling slightly in relative terms, since the growth of agricultural employment is lower than that of industrial employment.

In the second case the characteristics are the same, but the growth of industrial employment is twice as great. This acceleration of industrial growth has important consequences for agricultural employment, which continues to increase in absolute terms but at a slower rate.

In the third case. which is typical of that of a developed country, the rate of growth of industrial employment, higher than the rate of demographic growth (which is, in any case, relatively small), and the importance of the industrial sector in the over-all economy explain the rapid decrease of the agricultural population.

**103 The theory of the residual agricultural population.** In the foregoing, going on what we said on an economy in the process of industrialization, we first of all estimated industry's manpower needs and determined the 'necessary and sufficient' transfers of labour from agriculture to industry. From this point of view, the agricultural population may be thought of as residual, i.e. what remains when the other sectors have drawn what is necessary, and sufficient for their growth.

This trend is historically true since the process of industrialization is achieved by industry drawing on agricultural workers as it has need.

Agriculture thus plays the historical role of a reserve of manpower for industry. Adjustments of employment nevertheless do not occur without difficulty and disequilibrium since farmers may either resist transfers or accelerate them, causing in the second case a pathological exodus. In addition to inter-sector transfers of labour there are also geographical and international transfers.

Changes in the agricultural population are in the last analysis governed by the increase in the working-age agricultural population ($\Delta$Pa) and by the population transferred (Za). The variation in agricultural employment ($\Delta$Na) can be expressed as: $\Delta \text{Na} = \Delta \text{Pa} - \text{Za}$.

There are three possibilities:

1. $\Delta Pa = Za$ (transfer absorbs the increase and the agricultural population is stagnant).
2. $\Delta Pa > Za$ (transfer is less than the increase and the agricultural population increases in absolute terms (but decreases in relative terms if the growth of the industrial population is greater than that of the agricultural population).
3. $\Delta Pa < Za$ (the agricultural population falls in both absolute and relative terms).

Although the agricultural population in the West declined in relative terms during the nineteenth century, it continued to increase in absolute terms. At the present time, the situation in most LDCs is that of 2 and in the DCs that of 3.

**104 Decline of the agricultural population and growth in the productivity of agricultural labour.** The adjustment of production to the growth in demand for agricultural and food products can come about through a combination of increased employment and increased labour productivity. Since:

$$\mathrm{Ya} = \mathrm{Na} \times ya$$

where Ya = agricultural production; Na = agricultural employment; and *ya* = *per capita* production, it can be shown that:

$$r_{\mathrm{Ya}} = r_{\mathrm{Na}} + r_{ya} \text{ (see subsection 17).}$$

Let us suppose that the growth in the total demand for agricultural and food products is 4 per cent per year and that, bearing in mind the rate of increase of the working-age agricultural population (2.5 per cent) and the rate of transfer of agricultural population needed by industry (1.5 per cent), the agricultural population is increasing by 1 per cent.

In these circumstances, to meet the growing demand, the productivity of each agricultural worker must increase by:

$$r_{\mathrm{Ya}} = r_{\mathrm{Na}} + r_{ya}$$
$$r_{ya} = r_{\mathrm{Ya}} - r_{\mathrm{Na}}$$
$$= 4 - 1 = 3 \text{ per cent.}$$

If the needs of industry were such that a decline of, say, 2 per cent in the agricultural population occurred, the productivity of agricultural labour would have to increase by considerably more:

$$r_{ya} = 4 - (-2) = 6 \text{ per cent.}$$

Percentages of this kind are reached in the DCs and in the most advanced, productivity is increasing more rapidly in agriculture than in the other sectors of the economy.

It appears from these examples that the growth of labour productivity is one of the fundamental parameters of adjustment in the development process.

If the growth of demand for food products and the growth of non-agricultural employment are low, the growth of agricultural productivity will be low as well. Thus agricultural productivity cannot be explained exclusively or chiefly by agronomical considerations or technological standards; rather it results from inter-sector relations within the development process.

If the over-all growth causes a decline in the agricultural population, agricultural productivity must rise rapidly.

An important factor in the strategy of agricultural development is to raise agricultural productivity at the same pace as over-all growth.

**105 The contribution of agriculture to growth by transfers of resources.** The transfer of manpower may be a necessary but not sufficient condition for agriculture to contribute to over-all growth. Let:

$Za_{(0t)}$ = agricultural population transferred during a given period, i.e.

$$Za_{(0t)} = Na_t - Na_0).$$

$W_a$ = the productivity of agricultural labour; $W_i$ = the productivity of non-agricultural labour.

Agriculture contributes to growth by a transfer of workers if, and only if,

$$W_i > W_a.$$

The value of this contribution is:

$$Za(W_i - W_a).$$

If $W_i = W_a$, the transfers have no effect on over-all growth.

If $W_i < W_a$, the transfers are accompanied by a loss of productivity and retard growth. This occurs, for example, when the transfer changes partial agricultural underemployment into total unemployment, as may happen in the case of a pathological exodus, frequent in the LDCs.

The transfer of agricultural workers may, however, as we have seen, affect the growth of agricultural productivity itself. Finally, the contribution of agriculture to over-all growth may be expressed as follows (Kuznets formula):

$$W_1 - W_0 = (Wa_1 - Wa_0)\alpha a_0 + (Wi_1 - Wi_0)\alpha i_0 + (Wi_1 - Wa_1)(\alpha i_1 - \alpha i_0)$$

in which:

$$\alpha a_0 = \frac{Na_0}{N_0} \quad \alpha i_1 = \frac{Ni_1}{N_1} \quad \alpha i_1 - \alpha i_0 = \frac{Ni_1}{N_1} - \frac{Ni_0}{N_0}.$$

0 and 1 are respectively base year and terminal year.

The first term on the right-hand side of the Kuznets formula measures the direct contribution made by agriculture to the over-all growth of productivity, the second term measures the contribution of industry and the third the indirect contribution of agriculture following on the increase in the industrial population (relative to total population) by reason of the transfer of agricultural workers.

### *Transfer of savings*

**106 Agriculture, the sector for financing over-all growth.** In countries with large oil and mineral deposits, part of the profit from the exploitation of these resources may go to financing industrial and, possibly, agricultural development. To a certain extent, external aid may also facilitate basic investment but the debt-servicing burden sometimes becomes heavy and reduces the country's import capacity. In countries without mineral resources which wish to reduce external aid, agriculture is called on to play a decisive role as the sector for financing development. In these circumstances, a difficult and serious economic policy problem arises. If agriculture does not manage to make the necessary savings available, over-all growth runs the risk of being retarded or hindered. If the farmers are under such pressure that they no longer feel any incentive for improving their production and techniques, agriculture proves incapable of producing an agricultural surplus on which the development process is based.

In the LDCs, agriculture is frequently called upon to play an important role as a financing sector. The role of agriculture in the development of Japan is a particularly striking example. Development here was chiefly financed by the land tax, which accounted for 86 per cent of tax revenue in the mid-1870s and still accounted for 45 per cent by the mid-1890s. Altogether, in the mid-1890s, agriculture, while it contributed 50 per cent of the GNP, paid more than 80 per cent of the taxes.[1]

In those LDCs which have opted for achieving economic take-off by means of State capitalism, tax revenue constitutes the fundamental basis of development. The various aspects of tax policy seen in the context of its relations with agriculture and the development process will be dealt with later.

Agriculture can also contribute to financing through market mechanisms. In the LDCs, where the farmers frequently find themselves in an inferior position, the prices paid may be relatively low and include, in fact, levies on the product of the farmer's labour to the advantage of the middlemen. In this case, the indirect contribution of agriculture to the financing of development depends on the behaviour of the tradesmen who benefit from the levies.

In countries with a planned economy, transfers of part or all the increase in agricultural productivity can be achieved by fixing relatively low prices and, where appropriate, by making deliveries compulsory.

Many LDCs resort to export duties and levies on agricultural products (rice in Thailand, cotton in Pakistan, cocoa in Ghana, etc.). Levies under this system are easy to collect and can constitute an important source of revenue in countries with a large volume of agricultural exports accounting for a high proportion of total exports. Operation of the system is further facilitated where there are marketing boards, which can buy at prices lower than world market prices. Nevertheless, tax revenue is uncertain and fluctuating by reason of the very keen competition on the world market, the falling price of agricultural produce, fluctuations in exchange rates, etc.

Another way in which agriculture can make an indirect contribution to financing is by way of rent paid for land, which frequently amounts to a large sum in the LDCs. The proportion of this rent which is invested depends on the attitude of the landowners and whether they spend or save.

There are other ways still by which agriculture participates in the financing of development, particularly through the transfer of workers whose costs have been borne by agriculture during the period of biological growth and, perhaps, social training (education). In addition, the exodus of workers is always accompanied by the transfer of a greater or lesser amount of capital: the farmer takes his savings with him; he may sell his plot of land if he is the owner; he may also receive compensation if he leaves it to be worked by his family.

Finally, in some cases and especially in the advanced countries, farmers may subscribe to public modernization and capital investment loans, buy stocks and shares in non-agricultural businesses, etc., and thus participate voluntarily in financing the development of non-agricultural sectors.

In the LDCs, the transfer of agricultural savings to the other sectors is most frequently achieved by forced transfers. This is true in the case of taxes, land rent, market domination, fixed prices, export duties, capital transfers connected with the migration from the countryside, etc.

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[1] 'Agriculture in Economic Development', op. cit., p. 10.

These transfers sometimes reach such proportions that agricultural investment may be reduced and become insufficient. In these circumstances, agriculture is not modernized and the privations inflicted on the farmers are of no help to development. For instance, this happens if agriculture contributes to the support of an idle population, to the financing of prestige expenditure, to the maintenance of unwieldy and expensive distribution networks, etc. Furthermore, while the transfer of rural savings is doubtless a necessary condition for over-all growth, it is also essential that the savings transferred should actually be invested and that the coefficient of capital efficiency should be higher in the non-agricultural sectors than in agriculture.

## Contribution to the earning of foreign exchange

**107 The role of agriculture as a source of foreign exchange.** Analysis of the external relationships between the DCs and the LDCs has made it possible to highlight the role of agriculture as an earner of foreign exchange. Historically speaking, the development of a number of DCs was, in great measure based on an exporting agricultural sector, as in the case of Australia, Canada, Denmark, Sweden, New Zealand, and, to a large extent, the United States and even Japan (silk, tea).

Analysis of the recent situation has shown, however, that if agricultural production expands rapidly in the DCs, this tends to reduce these countries' needs. In addition, competition is keen on the market for tropical products and the terms of trade are tending to grow more unfavourable.

This situation can be improved to a certain extent by means of commercial agreements designed to facilitate the entry of products from the LDCs to the DCs and to stabilize prices, by diversification of the LDCs' economies, by reducing agricultural imports and by substituting the export of processed agricultural and food products for the export of raw materials.

To increase their import capacity, the LDCs can try to substitute their own products for imported products. This could be done in the case of imports of cereals and other agricultural products, industrial raw materials needed for production (fertilizers, cattle feed, cement, plastics, agricultural machinery and so on), etc. Wherever it is economically possible, development plans should therefore provide for the growth of national production to take the place of imports. This decision should take account of internal considerations and relative international advantages.

Another possibility for improving the import capacity of agriculture is to develop agricultural and food industries so as to have the benefit, for the export market, of the value added by these industries. For example, the LDCs could try to sell vegetable oil instead of oilseeds, leather instead of skins, tinned foods and processed products instead of raw products, wood products rather than roundwood, etc.

This policy nevertheless implies the possibility of setting up such industries and the ability to become established on the world market.

FAO experts make particular mention of the possibilities existing in the timber industry.[1] The wood-processing industry is generally located in industrialized countries. The LDCs export raw materials (roundwood) and import manufactured products, which leads to a financial deficit in these countries' forestry sectors.

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[1] 'Agriculture in Economic Development', op. cit., p. 5.

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Yet most LDCs have rich forest resources and the needs of certain DCs are likely to go on increasing. The LDCs should therefore be able to sell wood products rather than roundwood.

## Contribution to industrialization

**108 The agricultural and food industries.** Agriculture can contribute to industrialization in three ways: by providing industrial raw materials, which implies a growth and an adaptation of agricultural production; by providing workers and capital, which implies increased productivity from agricultural work; and by purchasing industrial products, which implies a growth in farmers' purchasing power.

As the second of these has already been considered, we shall here confine ourselves to the first and third.

Agricultural produce and foodstuffs are a relatively abundant raw material in the LDCs and, generally speaking, the agricultural and food industries are still not highly developed there. In the LDCs, subsistence agriculture continues to play an important role and analysis of the structure of the food production economy shows that the consumption of processed foods is relatively small. Yet these countries may import products for which national produce could be substituted.

The development of the agricultural and food industries can also be justified in terms of the production of tinned foods so as to reduce losses and regulate consumption or to improve the standard of nutrition by means of processed preparations. Further justification is provided by the increased value added in the products exported, and consequently by the increased amount of currency earned, as well as by the contribution so made to the development of second-stage processing industries (e.g. leather) or even third-stage processing (e.g. shoes).

In addition, the agricultural and food industries have certain characteristics which favour their establishment in the LDCs. As we have already said, they use widely available raw material whose cost most frequently represents a high proportion of the total cost (Table 32).

Some agricultural and food industries also have the advantages of being relatively labour-intensive (industries for processing certain raw materials for textiles, leather and skins, etc.), not requiring a large amount of skilled labour, being fairly easily adaptable to the gradual introduction of mechanization, being

TABLE 32. Basic raw material costs as percentage of total manufacturing costs

| Industry | Percentage |
|---|---|
| 1. Vegetable oil extraction | 75–85 |
| 2. Sugar manufacture | 70–80 |
| 3. Leather manufacture | 60–70 |
| 4. Milk and milk products | 50–70 |
| 5. Sawmilling | 50–70 |
| 6. Canned fish | 40–60 |

*Source: Monthly Bulletin of Agricultural Economics and Statistics*, February 1964, p. 7.

TABLE 33. Percentage contribution of the agricultural and food industries to industrial activity (1961)

| Region | Value added | Employment |
|---|---|---|
| Africa | 24 | 21 |
| Latin America | 21 | 25 |
| East and South-East Asia | 20 | 23 |

able to function on a relatively small scale, being amenable to establishment in rural areas, etc. In such cases, many factors argue in favour of establishing agricultural and food industries in the LDCs.

Some industries, on the other hand, are capital-intensive and are subject to considerable economies of scale (pulp for paper-making, fibre-board, etc.).

FAO experts draw attention to forest industries as a possible basis on which to establish other industries such as plywood products, joinery, wood-packaging, furniture, stationery and cardboard, paper bags, cardboard boxes, office supplies, etc. Similar examples could be given for abattoirs and other industries.

In many LDCs, the agricultural and food industries account for a considerable proportion both of the value added and of over-all industrial employment (Table 33). For all the LDCs taken together, this proportion, around 1960, amounted to 20–25 per cent.[1]

The relative importance of the industries in question could be increased still further, and they could thus contribute to over-all growth by increasing the value added, by creating employment, by earning foreign exchange, by stimulating other industries as a result of both forward linkage and backward linkage (chemicals, packaging, etc.) and lastly by contributing to the over-all process of industrialization. One should not however harbour any illusions about the role of the agricultural and food industries in the process of development. They can contribute to take-off, and in some countries they play a very important part in this respect, but it is obvious that the continuation and expansion of the over-all process of industrialization must be achieved on other bases.

**109 Agriculture as a customer of industry.** The contribution of agriculture to over-all economic growth can also be made through the growth of agriculture's demand for capital and consumer goods. The basic condition here is increased purchasing power on the part of the farmers.

Agriculture's demand for capital goods can be a stimulus to the iron and steel industry (tools, motors and pumps, various types of machinery, tractors), cement works and the building trade, the chemical industries (fertilizers, pesticides, plastics, rubber), agricultural industries (cattle-feed), etc.

Agriculture's demand for consumer goods can stimulate the leather industry, textiles, housing, household goods, gas and electricity, etc.

P. Bairoch has put forward the theory that agriculture played a decisive role in the economic take-off of the West, not only through the increased supply of agricultural produce needed by a growing economy but also through the stimulus to industrial production, particularly through the demand for tools, means of transport and textiles.[2]

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[1] J. C. Abbott, 'The Economics of Food Industries in the Developing Countries', *Monthly Bulletin of Agricultural Economics and Statistics*, March 1967.

[2] P. Bairoch, *Révolution Industrielle et Sous-développement*, Paris, SEDES, 1963, 360 p.

TABLE 34. Agriculture's share of GDP and working population in some less-developed countries

| Country | Period | Share of agriculture in | | Comparative level of agricultural income |
|---|---|---|---|---|
| | | GDP | Working population | |
| (1) | (2) | (3) | (4) | (5) = (3)/(4) |
| Egypt | 1950 | 41 | 64 | 64 |
| | 1965 | 30 | 55 | 55 |
| Argentina | 1950 | 14 | 25 | 56 |
| | 1965 | 17 | 18 | 94 |
| Brazil | 1950 | 29 | 59 | 49 |
| | 1965 | 30 | 52 | 58 |
| Colombia | 1950 | 39 | 54 | 72 |
| | 1965 | 32 | 47 | 68 |
| India | 1960 | 50 | 73 | 68 |
| | 1965 | 47 | 70 | 67 |
| Indonesia | 1960 | 49 | 68 | 72 |
| | 1965 | 48 | 60 | 73 |
| Pakistan | 1960 | 53 | 75 | 71 |
| | 1965 | 48 | 74 | 65 |
| Philippines | 1960 | 32 | 60 | 53 |
| | 1965 | 32 | 57 | 56 |

*Source:* FAO, *The State of Food and Agriculture, 1970. Annual Report*, p. 137, 274 p.

*Note.* Column 5 is obtained by dividing column 3 by column 4. While this gives a rather rough idea of the disparity in income, what is certain is that GDPA per head of agricultural population is usually considerably lower than GDP per head of total population, and in many countries the disparities have tended to become greater in recent years (Egypt, Colombia, Pakistan). Inter-sector disparities are accompanied by intrasectoral disparities which it is nevertheless impossible to estimate owing to lack of available statistics.

At the start of the development process, when the agricultural population strongly predominates, agriculture is an important potential market. However, this potential can only be realized if the farmers' purchasing power increases and hence if agricultural productivity increases.

**110 Farmers' purchasing power.** In almost all LDCs, the purchasing power of farmers is markedly lower than that of other sectors of the economy. In 1970, FAO published figures concerning thirty-three LDCs [4, p. 135 et. seq.], and in all countries, with just two exceptions, the ratio of GDPA to GDPT was appreciably lower than the ratio of agricultural population to total population. In nine countries, the figures available show that agricultural income is less than half the average income of the other sectors.

This estimate of the relative income of agriculture (obtained by dividing GDPA as a proportion of GDPT by the agricultural population as a proportion of total population) is a rather rough approach.

Nevertheless, there seems no doubt about the low level of farmers' relative incomes and the situation has not improved over the last few years. In the thirty-three countries observed by FAO, the situation has worsened. During the 1960s, the growth of GDPA in the LDCs was about 3 per cent per year and the growth of GDPT was 4.7 per cent. As the population has increased over-all at the rate of 2.6 per cent and the agricultural population 'probably only slightly more slowly' [4, p. 135], the conclusion is that the *per capita* GDP has increased more quickly in the non-agricultural than in the agricultural sectors.

The sectoral disparity between incomes to the disadvantage of the farmers raises many problems.

1. To a large extent, these disparities are a condition of over-all growth, in the sense that they induce certain farmers to change their job, thus satisfying the manpower needs of the non-agricultural sectors.
2. The existing situation may result from transfers of income carried out by various methods to finance development.
3. It may also result from a relative stagnation of production for lack of suitable encouragement to farmers, who remain sceptical as to the possibility of their incomes rising. The small increase in agricultural productivity may also be due to the farmer's low purchasing power which makes it impossible for them to buy certain aids to production (fertilizers, pesticides, etc.).
4. Finally, low purchasing power is an obstacle to the growth of the demand for capital goods for use in agriculture, and for consumer goods. In these circumstances industry cannot be stimulated. The lack of agricultural purchasing power may even slow or obstruct over-all growth.

It is obvious that distributing the fruits of the increased productivity of farmers between agricultural investment, the raising of their standard of living and the financing of over-all development forms a complex yet fundamental aspect of economic policy, particularly in countries which base their development on agricultural growth.

**111 Growth and improvement of rural standards of living.** At the start of the development process, the improvement of rural standards of living may be particularly slow. However, this situation cannot continue without raising serious general policy problems. As agricultural productivity improves, some of the gains from this increased productivity must be earmarked for the modernization of agriculture and the improvement of rural living standards, in order to ensure the continuity of agricultural progress, encourage the farmers and satisfy the needs of social justice. The growth of *per capita* income is one of the primary goals of development, aiming at the satisfaction of basic needs such as food, health, education and information, housing, etc. The standard of living of rural populations is particularly low in the LDCs and great efforts must be made to raise it.

The welfare of the rural population stems from the rise in general standards of living, i.e. the development of consumer-goods industries, the establishment of an infrastructure which facilitates communications and permits distribution of drinking water, gas, electricity, etc., the building of hospitals and schools and so on.

Agriculture can thus be viewed from the standpoint of its contribution to growth, but the part it can play in raising general standards of living must not be lost sight of either, neither must there be too much delay before it starts to play this part, otherwise there is a risk—in this era when information is rapidly available and urban patterns are spreading—that grave political troubles will result.

## Check test

| Statements | True | False | Don't know | Subsection |
|---|---|---|---|---|
| 1. The input-output coefficient *ij* equals the purchases of sector *j* from sector *i*, divided by the total purchases of sector *j*. | | | | 93 |
| 2. In the DCs, agriculture is not an industry which produces goods for final consumption. | | | | 95 |
| 3. In the triangulated table of inter-sector relationships, the 'basic' industries are technically independent. | | | | 96 |
| 4. The growth of 'industrial' employment always brings about an absolute decrease in agricultural employment. | | | | 102, 103 |
| 5. The decline of the agricultural population always brings about a growth in the productivity of agricultural labour. | | | | 104 |
| 6. The transfer of agricultural workers does not always bring about an over-all growth in the productivity of labour. | | | | 105 |
| 7. The aim of an agricultural prices policy may be to organize the participation of agriculture in the financing of over-all development. | | | | 107 |
| 8. The relative poverty of farmers is a specific characteristic of the LDCs. | | | | 110 |

## Revision exercises

16. The production of sector *j* equals 110, intermediate consumption equals 80 and the purchases of sector *j* from sector *i* equal 20. Calculate:
    (a) the coefficient of purchases;
    (b) the input-output coefficient *ij*;
    (c) the structural coefficients of sector *j*.

17. Let $\alpha_a$ and $\alpha_i$ be the relative importance of the agricultural GDP and the industrial GDP in the over-all economy, and let $r_a$ and $r_i$ be the respective growth rates of agriculture and industry. For an LDC where

$$\alpha_a = 0.6,\ \alpha_i = 0.4,\ r_a = 3,\ r_i = 6,$$

calculate the over-all economic growth.

18. Given that $\alpha_a$ and $\alpha_i$ have the same meaning as in exercise 17 and given that $r_N$, $r_{Na}$ and $r_{Ni}$ are the respective growth rates for employment in the over-all economy, in agriculture and in industry:
    (a) Calculate the variation of $r_{Na}$ when $r_N = 2.5$ per cent, $i = 0.4$ and $r_{Ni} = 5$ per cent.
    (b) What would occur if $r_{Ni}$ were to double?
    (c) What would occur if $r_N = 1$ per cent, $r_{Ni} = 5$ per cent?

19. In an LDC, the demand for food grows annually by 4. At the same time, the growth in the working-age agricultural population is 2 per cent and the rate of transfer of the agricultural population to industry is 1 per cent. Calculate the changes in the productivity of agricultural labour needed to meet the growth in the demand for food.

## Topics for group discussion

1. How are country-dwellers informed of the creation of non-agricultural employment openings and urban living conditions? What should be done to improve information in this field?
2. What are the reasons which lead country-dwellers to abandon agriculture?
3. Do you know any regions where country-dwellers are hesitant to abandon agriculture? Why?
4. How are the fruits of increased agricultural productivity transferred to benefit industry?
5. Are the agricultural and food industries developed in your region? Give examples of industries using agricultural and food products which could be developed.
6. What goods originating in industry are purchased by the farmers? If the farmers' income increased, what do you think would be the goods for which demand would most increase?
7. How could farmers' incomes be raised?

## 2

# The role of agriculture in bringing about development

**112 Is agriculture a 'leading' sector or one that follows suit ('adjusts')?** The last chapter dealt with the different ways in which agriculture can contribute to over-all economic growth, and could be regarded as an inventory of the economic functions which agriculture can fulfil in the process of development. But the actual contribution of agriculture, which depends in the last analysis on the effectiveness of its role within a specific development process and is of particular importance at the take-off stage, is determined by a number of factors, such as the relative importance of agriculture, its ability to create a surplus based on expansion of external and internal markets, its adaptability with a view to increasing agricultural productivity, the availability of resources other than agricultural resources to 'feed' the process of development, the socio-political beliefs of officials and community leaders, etc. One possible way of elucidating policy is to consider in turn the arguments generally adduced in favour of priority being given to industry or agriculture respectively. However such arguments are not of great practical use. There is more to be gained from considering the mechanisms of development from the standpoint of the trend in relationships between the agricultural and industrial sectors. For if agriculture plays the part of a 'leading' sector it obviously has a decisive role in economic take-off. But even if its function is merely to follow suit or 'adjust', economic analysis makes it clear that neglect of agriculture would probably lead to severe disillusionment.

The theory of the relationship between agriculture and industry in the process of development is based mainly on analysis of equilibria and disequilibria in the process of growth, 'technological options'—i.e. the method of development chosen—and 'leading' or key industries. We shall first examine these analyses briefly in an introductory section on method, then we shall consider sector priorities in the process of development and finally the relationship between agriculture and industry within this process.

## Introductory considerations on method

**113 Theories used in the analysis.** Agriculture can perform various functions in the over-all economy and play a role of greater or lesser importance, depending on the method of development chosen. For analysing the role of agriculture in the process of development it is useful to have recourse to the theories concerning sectoral balance or imbalance in the process of growth, 'technological options' and their repercussions on rates of development and the sectoral distribution of investments, and the effects of 'leading' or key industries.

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Depending on the models and the methods proposed, growth may be described as 'balanced' or 'harmonious' or as 'unbalanced', depending on whether development is achieved by adjusting the different sectors of the economy to increases in demand or whether, for strategic reasons, priority is given to basic industries or to 'leading' or key industries.

These economic options correspond to alternative geographical distributions of activity, involving 'concentrated' or 'polarized' siting of key industries or their more even distribution over the whole territory.

The theory of balanced or unbalanced, concentrated or dispersed growth is linked with the theory of 'technological options'. As capital is necessarily limited, if the ratio of capital invested per worker is high, preference being given for example to heavy industry, few jobs are created and they are restricted to certain privileged sectors and areas. If, on the other hand, the capital invested per labour unit is small, preference being given to the improvement of agriculture, crafts, small industries, etc., development can be more evenly distributed.

The 'key industry' theory defines the mechanisms whereby rapid-growth industries or industries which encourage structural change affect their environment. According to this theory key or 'leading' industries tend to modify growth rates, facilitate innovation, transform economic and social structures and behaviour patterns and engender and propagate growth and development.

### *Balanced or unbalanced growth*

**114 Balanced growth.** The theory of balanced growth is based on the one hand on the need to meet increased sectoral demand (taking into account the pattern of international trade), and on the other on the inter-sector relationships within the economy as a whole (characterized by input-output coefficients).[1]

Investment policy must therefore be based on forecast trends in demand in order to avoid sectoral imbalance which might impede or prevent growth. Agriculture may be used to illustrate this theory: if agriculture is neglected, supply may increase more slowly than demand, the result being an inflationary situation, importation of food products rather than capital goods and, ultimately, a reduction in over-all growth.

Balanced growth therefore depends on 'harmonized' development of the different sectors of the economy and recognizes that investment in infrastructure, productive investment and social investment are complementary.

It is based on the forecasting of demand and the estimation of resources by means of capital, employment and import coefficients.

**115 Unbalanced growth.** The theory of the unbalanced growth of 'leading' (key) sectors and industries, 'growth poles', etc. rests on various arguments.[2] According to Professor Hirschmann the theory of balanced growth is unrealistic and, from the point of view of investment policy, impracticable.

The different economic sectors do not all develop at the same rate or at the same time. There are, to use W. W. Rostow's term, 'leading sectors' which play a major role during the take-off period and at the different stages of development. Agriculture and the iron and steel and textile industries played a decisive part in the economic take-off of the United Kingdom and France, as did the railways in the United States, Canada and Germany, wood and wood-pulp in Sweden, armaments in Japan, dairy produce and meat in Denmark, etc. At other stages of development the automobile, chemical, electronics and other industries have all helped to stimulate over-all development. The idea of key or 'leading' industries involves historical and geographical considerations alike.

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[1] Some of the main proponents of this theory are Rosenstein-Rodan, Nurske and Lewis.

[2] These are put forward mainly by Hirschmann and F. Perroux.

The theory of 'leading' sectors is also linked with the so-called 'jump growth theory', which applies particularly to the case of exporting countries. Partly as a result of trends in international trade and partly as a result of domestic capabilities, various products have at certain periods played a crucial role (furs in Canada, forestry in Sweden, silk in Japan, etc.). Whether internal or external factors provide the original impetus, growth sectors can only play a 'leading' or stimulating role in development to the extent that growth spreads from the privileged sectors of areas where it originates to other sectors.

According to A. O. Hirschmann the policy proposed by the supporters of balanced development is in any case impossible to apply, for this kind of development requires more capital and trained personnel than are available in LDCs, which cannot afford to disperse their assets. The basic problem which they have to resolve is not how to meet short-term demand but how to transform their economy, deciding which activities to develop first in accordance with a pre-arranged strategy.

Another argument advanced by A. O. Hirschmann in support of unbalanced growth is that concentration of resources in a few industries permits economies of scale in that larger units are formed.

### '*Technological options*' (*alternative methods of development*)

**116 Capital investment per manpower unit.** The basis of over-all economic growth is increased labour productivity. In a dualist economy which has one sector with relatively high productivity (modern) and one with relatively low productivity (traditional), the proportion of workers whose productivity is high must be increased, or in other words the 'modern' sector extended.[1]

A given volume of production (Y) can be obtained on the basis of variable amounts of capital (K) and labour (N), or in other terms by variable coefficients of capital per manpower unit: $k_n = K/N$.

If $k_n$ is high, the production process is capital-intensive; if $k_n$ is low, the process is labour-intensive.

When $k_n$ rises, productivity increases—up to a certain limit, the level of which depends on technological factors. This is particularly so in the LDCs, given their low technological level.

The value of $k_n$ depends on the method of development chosen: preference may be given to production processes that use heavy modern equipment which is very expensive and whose operation requires technical know-how or, on the other hand, to production processes which require less capital but more labour.

But the value of $k_n$ also depends to a certain extent on the choice of 'leading' industries, for at a given stage of technological development certain industries require a higher ratio of capital investment per manpower unit than others.

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[1] R. Bastianetto, *Essai sur le Démarrage des Pays Sous-développés*, Chapter A, p. 149–60, Paris, Cujas, 1968, 379 p.

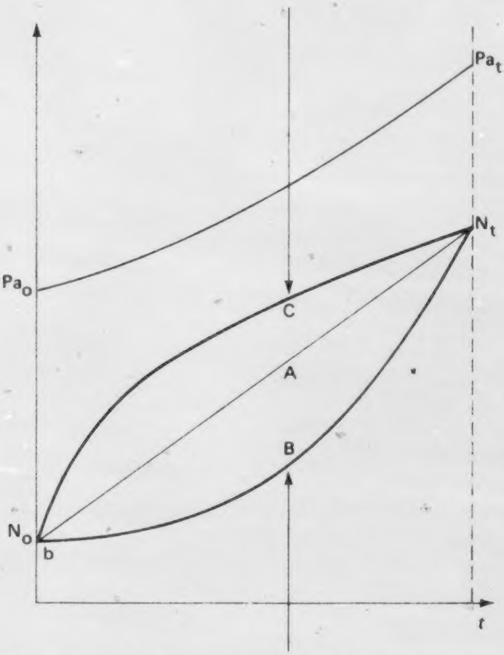
The method of development chosen and the choice of 'leading' industries affect the balance or otherwise of economic growth. Where capital is limited the choice of capital-intensive industries inevitably leads to unbalanced growth. The choice of $k_n$ influences the distribution of investment between the different sectors.

To illustrate the relationship between the method of development chosen and the process of growth let us suppose that the development programme envisages for year $t$ a number N of productive workers, representing a certain percentage of total working population (Pa). There are several ways of achieving this objective, as shown in Figure 14. Alternatives B and C are particularly characteristic.

FIG. 14. Growth of productive population (N) as a function of choice of $k_n = K/N$, K being limited (after R. Bastianetto, *Essai sur le Démarrage des Pays Sous-développés*, p. 204, Paris, Cujas, 1968, 379 p.).

**Alternative C.** Initially $k_n$ is low and the necessary plant and equipment can be provided for a large number of workers (labour-intensive process). Subsequently there may be an increase in the amount of capital needed per head.

Decreasing rate of growth in the productive population.
Increasing *per capita* investment.



$Pa_t = Po\,(1+r)^t$

Objective: $t = \frac{Nt}{Pa_t} = x\,\%$

$\boxed{N = f(t) = at^m + b}$

| | $m$ | N′ | N″ |
|---|---|---|---|
| A | = 1 | a | 0 |
| B | > 1 | + | + |
| C | < 1 | + | — |

*Type of increase in the productive population:*

A = constant rate of growth.
B = increasing rate of growth.
C = decreasing rate of growth.

**Alternative B.** Initially $k_n$ is high and the number of workers for whom plant and equipment is available ($K/k_n$) is relatively low (capital-intensive process). Subsequently it becomes possible to absorb an increasing number of workers, less capital being needed per head.

Increasing rate of growth in the productive population.
Decreasing *per capita* investment.

**117 Alternative B: increasing rate of growth of the productive population.** Alternative B represents a process of industrialization based initially on a large investment of capital per manpower unit. In such circumstances the number of workers for whom the necessary plant and equipment can be provided is relatively small and growth is unbalanced. Subsequently it becomes possible to develop industries with a relatively low capital outlay per manpower unit, the number of workers for whom plant and equipment is available increases more rapidly and growth tends to become more balanced as between sectors. This process aims at creating initially strategic industries and areas which will play a crucial role in implementing a long-term industrialization programme. It is characterized by an increasing rate of growth of the productive population and by a decreasing trend in *per capita* investments.

Classic examples of this process are concentration initially on iron and steel industries (basic to many other industries), oil-refining industries (the basis for petrochemicals), etc.

The view that priority should be given to strategic industries which will stimulate long-term development is basically that of Hirschmann and socialist authors. Without denying that 'small industry' can contribute to take-off (and that it may sometimes be the only method possible), these authors feel that this type of growth may soon run out of steam and that over-all growth may be held up by lack of basic industries, obliging the country to import capital goods. In fact the ability to import and the whole pace of development may both be severely restricted by a balance of payments deficit.

But many dangers attend highly capital-intensive projects: they may prove too ambitious and misfire; they may require a large pool of skilled manpower which is not available; and they may produce a smaller surplus than expected. This surplus may then be unsatisfactorily distributed and the end result may be that the stimulus provided by such projects does not come up to expectations.

**118 Alternative C: decreasing rate of growth of the productive population.** Alternative C represents a process of industrialization based initially on a small investment of capital per manpower unit. In such conditions the number of workers for whom plant and equipment can be provided is relatively high and the capital available can be more evenly distributed among the different sectors.

In a second phase, industries which are more capital-intensive will be established, financed in part by the surplus from the first-phase industries and capable of broadening the process of development and ensuring continued growth. This process tends to be characterized by a decreasing rate of growth of the productive population and an increasing trend in *per capita* investments.

For example preference may be accorded to giving a new impetus to agriculture or craftwork, or priority given to light industries supplying mainly consumer goods (clothing, footwear, furniture, etc.).

C involves fewer short-term risks than B, but the surplus from the first phase may not be sufficient to establish the second-phase industries quickly enough.

**119 The theories and reality.** The distinction drawn between alternatives B and C, which is very useful for the purposes of exposition, is based purely on theory. In practice agriculture and craftwork may be encouraged and light industries developed at the same time as the first highly capital-intensive industries are established.

Moreover, the historical context, the short-term economic situation, relationships of interdependence and the structure of the LDCs also play an important, if not decisive, role in the choice between the various methods of development.

When an LDC has a craftwork sector which is able to meet such needs as the need for clothing or furniture satisfactorily, the creation of a capital-intensive form of production may lead to wasted capital and the ruin of the small craftsmen, thus resulting in more underemployment.

The type of development chosen depends largely on government structures and on the political and social situation. Factors affecting the decision are: the ability of the political authorities to impose austerity measures, the employment situation and social unrest, the level of social aspirations and expectations, the psychological effects of short-term results, etc.

**120 The choice between alternative methods of development in relation to agriculture.** The method of development chosen affects agriculture in various ways. If it involves a high rate of capital consumption there is a risk that agricultural investment will be neglected and priority given to small-scale operations in this sector; if it is based on a large capital outlay per manpower unit, the number of jobs created will be relatively small and there will be little industrial demand for transfer of agricultural labour. In such circumstances the agricultural population increases while investments in agriculture remain relatively stagnant. The standard of living in the countryside will drop and this will eventually lead to a pathological exodus from the land. This kind of situation is likely to arise when industry is the 'leading' sector and agriculture is neglected.

If agriculture is the sector which leads the economy, investment must be guided by the objectives of growth. The choice of agricultural techniques affects both the rate of growth of agricultural production (the need for large-scale equipment to farm certain areas or to rotate crops under certain systems of production) and the rate of increase in productivity. The speed with which modernization is carried out must be adjusted to the rate of transfer of the agricultural population. Premature replacement of labour by capital increases production costs, involves the farmer in debt and finally lowers his standard of living.

### *'Leading' sectors*

**121 The 'leading' sectors theory.** This theory involves analysing the mechanisms whereby certain sectors are capable of stimulating growth in other sectors and bringing about changes in their environment. The effects of 'leading' industries can be broken down as follows:

1. To stimulate the purchase of intermediate goods required by the 'leading' industries. For example, the growth of an automobile industry stimulates the iron and steel industry, engineering, industries producing glass, leather and plastics, etc. The higher the input-output coefficient, the greater this effect will be.
2. To encourage by their example a more creative and innovatory approach, which will bring about increases in consumption by lowering costs (one aspect of the democratization of demand) and lead to the introduction of substitute products and alternative industrial processes (e.g. the substitution of plastics for leather).
3. To have a cumulative and multiplier effect on over-all demand by increasing employment and incomes, thus stimulating the economy as a whole. If the

establishment of a particular industry results in additional income of, say, 100 units, part of this income will be saved and part consumed. The proportions saved and consumed respectively will depend on the marginal propensities to save and to consume for the particular economy or social group in question (see subsection 40). Let us suppose that the marginal propensity to consume (mpc) is 0.8, in this case the marginal propensity to save (mps) is 0.2 (mpc plus mps = 1).

Then 80 units of the additional income of 100 units will be spent—e.g. on food, clothing, entertainment, etc. But this expenditure itself will swell the revenues of those who provide food, clothing, entertainment, etc., who in turn will be able to purchase other goods, stimulating other types of production and forming new sources of revenue. This is obviously a cumulative, though limited, process, whose multiplier effect may be calculated as follows:

$100 \times 0.8 = 80$
$80 \times 0.8 = 64$
$64 \times 0.8 = 51.2$ etc. . . .

$= 100(1 + 0.8) + (0.8)^2 + (0.8)^3 \ldots$ a progression the limit of which is $100 \times \frac{1}{1 - 0.8} = 500$. The multiplier effect is equal to $\frac{500}{100} = 5$.

4. The snowball effect of investment. The expansion of 'leading' firms and of firms stimulated by the increased demand for intermediate goods and consumer goods leads to an increase in investment in a proportion which depends on the capital/output ratio.
5. Lastly the snowball effect of methods, structures and mental attitudes characteristic at a given moment of advanced types of industry, which once formed permeate other sectors of society.

To sum up, 'leading' industries increase the flow of trade and create new trade patterns, new methods and new products, lowering costs and prices and finally altering the production apparatus and the volume and structure of consumption.

Advocacy of unbalanced growth involves giving preference to industries which will have important repercussions by both backward and forward linkage and which will help to ensure long-term industrial development. The iron and steel industry has very high coefficients of interdependence, and is a strategic industry on which an industrial superstructure can be based.[1] But it must not be forgotten that the idea of 'leading' industries involves historical and geographical considerations and that such industries will differ according to the stage of development and the potential resources that can be mobilized.

**122 Geographical 'growth poles'.** The economic theory of unbalanced growth is connected with the theory of geographical 'poles' for growth and development. The areas in which 'leading' industries are located are, under certain conditions, focal points likely to affect the development and transformation of the whole of a given geographical area. Experience does show that growth rates differ from one region to another: those which are well supplied with 'leading' or key activities in the primary, secondary or tertiary sector have higher growth rates. Choice of the regions in which 'leading' industries are established is based on such factors as the existence of raw materials, cheap energy, good transport facilities, a large work force, proximity to a consumer centre, etc., and also on action taken by the State, in encouraging or decreeing, by a system of incentives or public investment respectively, the establishment of such focal points for development.

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[1] A. O. Hirschmann, *The Strategy of Economic Development*, p. 108, New Haven, Conn., Yale University Press, 1959, 217 p. (Yale Studies in Economics, 10.)

Industrialization is not enough to create a focal point for development or a 'growth pole': the pace of economic and social transformation depends on the size and the rate of growth of the industries which have been established and on their ability to stimulate and attract other types of activity.

Lastly, the 'growth pole' theory implies that revenues resulting from the activities of the 'leading' industries can be re-invested within the same geographical area, that the jobs are filled by workers from the area, etc. If these conditions are not fulfilled the establishment of 'leading' industries may have little or no effect upon their environment. This type of situation is not uncommon in the LDCs. Certain industries which are established and sited on Western initiative import their own qualified staff and sometimes part of the labour force, the machines and some of the consumer goods required and export their revenues, etc., thus forming practically closed economic subsystems which have no effect upon regional development.

On the other hand, once the cumulative process is set in motion 'leading' industries can transform economic structures, stimulating and attracting new industries which produce capital and consumer goods and services, and also alter social structures (for example by making farmers into workmen or office workers), mental attitudes and behaviour patterns (psycho-sociological effects of industrialization), and, lastly, the geographic structure itself (urbanization, communications, etc.).

## Sectoral priorities in the process of development

**123 Agriculture and industry.** As regards the link between agriculture and development the theory of unbalanced growth encourages us to look for arguments which might support the decision to give priority either to industry or agriculture, while the theory of balanced growth encourages us to seek to adjust the relative growth of industry and agriculture within the over-all process of development.

In the course of the history of development in the West mercantilists, physiocrats and industrialists have in turn given priority to commerce, agriculture and industry as the main source of wealth. The abolition of the Corn Laws in Britain in 1846 marked the triumph of the industrialists over the agrarians. The doctrinal quarrels which marked the history of Western development illustrate different aspects of the relative advantages to be expected according to whether preference is given to agriculture, industry or other activities at different stages of development. Western experience and theories are undoubtedly an important chapter in the history of world development but as a basis for understanding and taking action in the LDCs their usefulness is limited by the differing historical contexts.

However, since economic analysis shows that there is a high degree of correlation between industrialization and standard of living and that industrialization has been a determining factor in successful economic growth, the tendency in many LDCs is to give priority to industry.

Yet, experience has shown that if agriculture is neglected it cannot fulfil the economic functions which we have described in preceding chapters and reduction or paralysis of over-all growth may ensue.

In this section we shall consider the arguments put forward in favour of giving priority either to industry or to agriculture before going on to show that if underdevelopment is to be remedied methods are called for which imply certain inter-sectoral links and mechanisms.

## *Priority to industry*

**124 The example of the West.** Some arguments are based mainly on Western experience: industrialization was instrumental in ensuring both economic growth and development in the West. Other arguments refer more particularly to the present situation in LDCs: industry would seem to be able to play an important role in bringing about the basic economic equilibria (for example balance of employment and balance of payments).

Industrial growth (and the relative decline of agriculture) is one of the most outstanding characteristics of countries which have made a success of economic development (Western Europe, North America, U.S.S.R., Japan). Industry was in the end the most important sector, even in countries whose growth was based on agricultural exports. In 1965 agriculture as a percentage of GDP represented 15 per cent in Denmark, 11 per cent in Canada, 10 per cent in Australia and 13 per cent in New Zealand.

In all developed countries the growth rate in the industrial sector has overtaken that of agriculture and the relative value of this sector within the economy as a whole has diminished.

Industrialization is regarded not only as the principal source of economic growth but as an essential instrument of long-term socio-economic change.

Industry, which is characterized by high rates of invention and innovation, creates new production processes, a new technology, new socio-economic structures and new mental attitudes and approaches.

The history of Western development could be analysed in terms of ideological conflicts between agrarians and industrialists, between country- and city-dwellers, etc. But in Western society once a certain stage has been reached agriculture itself becomes 'industrialized'; this means that it tends to adopt the methods, forms of organization and behaviour patterns which have evolved in the industrial sector.

The expression 'the industrialization of agriculture' is used in the West to refer to the radical changes now taking place in agriculture. This does not mean that agriculture is losing all its distinguishing features: it remains based on the use of a 'biological converter', with very important consequences, but the increasing rate of invention and innovation, the increasing use of a more rational approach, the increase in capital investment per labour unit, the scientific division of labour (entailing the replacement of mixed farming by specialized forms of production), the rapid increase in labour productivity, the emergence of mass production techniques (poultry-farming), etc.—all this means that the production processes used in agriculture are becoming more and more similar to those used in industry.

The far-reaching changes now taking place in Western agriculture are not a direct product of agricultural progress; they result rather from industrial development which is thus seen as an instrument of change in the agricultural sector.

**125 Industrialization and basic equilibria.** Another argument in favour of giving priority to industry is connected with population growth and the balance of employment. The high rate of population expansion in LDCs means that the size of the potential labour force is continually increasing and that jobs should be created at a rate which will enable surplus labour to be absorbed. Experience shows that in most cases the extra employment created by growth in the agricultural sector is not sufficient to absorb population increase. In such circumstances it is absolutely essential to provide employment outside agriculture. If non-agricultural jobs are not created there is increasing underemployment in agriculture or, even more serious, a 'pathological exodus' from the land turns agricultural underemployment into urban unemployment.

This argument in favour of creating jobs outside agriculture is further supported by the fact that the resulting increase in income increases the demand for food products and encourages the development of market-oriented agriculture, a basic precondition for agricultural growth.

A preference for industry may also be justified by a balance of payments deficit and the conditions of international trade.

Agricultural exports currently form a large proportion of total exports from the LDCs but the present-day conditions of international trade are different from those prevailing in the nineteenth century. As has been pointed out, growth based on agricultural exports may well be evanescent in character. Such exports tend to aggravate the situation rather than improve it if losses resulting from changing terms of international trade outbalance the gains accruing from increased agricultural productivity.

In addition to the factors connected with the changing conditions of international trade to which we have just referred, in certain countries agricultural production cannot be increased without large-scale land reform, irrigation and drainage projects and the provision of major facilities for transport, storage and processing, etc., resulting in a high capital/output ratio; moreover, marginal investment per manpower unit tends to be higher in agriculture than in certain light industries which are characterized rather by a high labour/output ratio (textile industries, for example). In these circumstances it is legitimate to ask whether the available capital should not be used primarily to create jobs in industry.

In certain less-developed countries a new model of international trade relationship is thus beginning to emerge: these countries would tend to specialize in the production of manufactured products with a high labour/output ratio and to import agricultural products or manufactured products with, in general, a high capital/output ratio.

India, which has become one of the world's most important exporters of textiles, and the Republic of Korea, whose exports have been increasing at a rate of 10 per cent in recent years, can be cited as illustrations.

These are not the only arguments which are advanced in favour of giving preference to industry in the process of development. It must be admitted that these arguments do not at first sight lack cogency. However, more detailed analysis of the mechanisms of development shows that they are not as convincing as they might appear. For the process of development implies certain relationships between rates of growth in agriculture and industry. Before examining these relationships let us consider some of the arguments advanced in favour of giving preference to agriculture.

### *Priority to agriculture*

**126 Arguments in favour of giving priority to agriculture.** The arguments in favour of giving priority to agriculture are based on the economic functions of the agricultural sector in the process of development, which we have already analysed. These arguments can be conveniently divided into three categories.

1. They relate to the basic and characteristic function of agriculture, which is to supply food. As we have seen, in many countries food consumption per head is stationary or even declining. In view of the need to improve the standard of nutrition and meet the challenge of population growth, priority should be granted to agriculture. This argument is further strengthened by the fact that with supply failing to keep pace with increasing demand, full use is often not made of available resources of manpower and land, and this is the real scandal of agricultural underdevelopment.
2. They also relate to the role of agriculture in establishing the basic economic equilibria: balance of employment, balance of payments, and balance of savings and investments.

   If the flow of labour towards the towns is not to outstrip the creation of jobs outside agriculture, agriculture itself must be modernized and standards of living raised in order to prevent this pathological exodus from the land which leads to an increase of urban unemployment and generates all kinds of other problems.

   There is no doubt that the conditions prevailing in international trade do not favour an extension of agricultural exports. However the balance of payments of many LDCs is seriously in deficit and the contribution of agriculture towards reducing this deficit is essential as these countries do not normally have any alternative. International competitiveness requires that agricultural productivity should be improved and agriculture itself modernized.

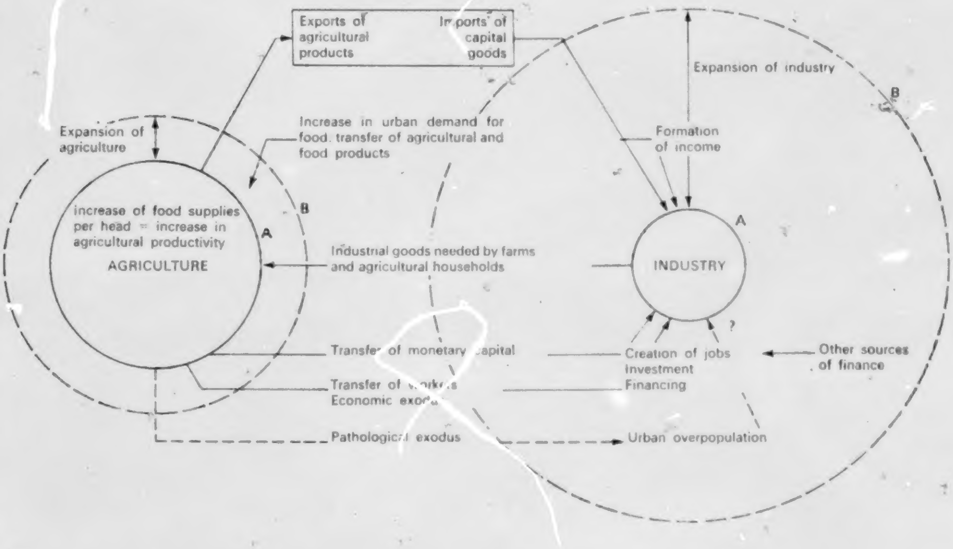
   Finally the agricultural sector can only contribute towards the financing of development and the general equilibrium of savings and investment by improving its own standard of living.
3. The third category of arguments in favour of giving preference to agriculture relates to the specific contribution agriculture has to make to the process of development. For even if one were to agree with the industrialists that industry (or tourism, or any other non-agricultural activity) is the basis for economic development, agriculture is itself in many countries the only basis on which the process of industrialization can be founded. In order to enable agriculture to supply industry with the manpower, capital, currency and raw materials which it needs and to stimulate industrial expansion by increased demand for industrial goods in the agricultural sector, agriculture must be modernized and its productivity improved. If the industrialization of an LDC is to be achieved mainly by the use of internal resources, it cannot be successfully carried out on the basis of a traditional system of agriculture.

### *Balanced growth; agriculture and industry*

**127 Outline of relationships between agriculture and industry.** In view of the importance of Western penetration and international trade in the economic life of the LDCs, it would not be realistic to design a 'closed' model.

The diagram given in Figure 15 therefore illustrates the relationships between agriculture, industry and foreign markets. It shows the process of development proceeding from situation A (continuous line) to situation B (broken line), on the basis of expansion of industry and agriculture. As the growth rate in industry is more rapid than in agriculture a structural change takes place within the economy, characterized by a relative decline in the importance of agriculture and by transfer of resources.

FIG. 15. The process of development: diagram of relationships between agriculture and industry (understood to mean all non-agricultural sectors) within a process of development based on industrialization made possible by agricultural expansion. Over-all growth is a result of the expansion of agriculture and industry (at a slightly faster rate) and of the transfer of resources (men and capital) from agriculture to industry, a transfer made possible by increased productivity in the agricultural sector.


Exports of agricultural products
Imports of capital goods
Expansion of industry
B
Expansion of agriculture
Increase in urban demand for food. transfer of agricultural and food products
Formation of income
increase of food supplies per head = increase in agricultural productivity
AGRICULTURE
A
B
A
Industrial goods needed by farms and agricultural households
INDUSTRY
?
Transfer of monetary capital
Creation of jobs
Investment
Financing
Other sources of finance
Transfer of workers
Economic exodus
Pathological exodus
Urban overpopulation

It is clear that such a transfer of resources is inevitable: if the point of departure is an agricultural society, practically all the country's resources of labour, land and other assets are to be found in the agricultural sector. As development progresses and industry expands more rapidly, part of these resources are bound to be transferred from the agricultural to the industrial sector. Development is a process of transfer.

But transfer may be internal (from one sector to another within the national economy) or external (from one sector to another via external markets). In the latter case, for example, the agricultural sector provides foreign exchange either by exporting migrant workers or by exporting agricultural or food products; this foreign currency will be used to expand industry by the importation of capital goods.

Finally, the process of development leads to an increase in the exchange of goods between the agricultural and the industrial sector. Agriculture supplies the foodstuffs and raw materials which are needed to keep pace with the increase in urban population and with the process of industrialization As the productivity and purchasing power of the rural sector increases, it in turn becomes a market for the manufactured goods of the industrial sector. The major trade relationships between agriculture and industry are shown in Figure 15.

**128 Introduction to the study of transfer processes.** As development is a process of transfer from one sector or from one area to another it is important to examine the mechanisms whereby resources (labour, savings) and goods (capital and consumer) are transferred.

There are three basic types of transfer mechanisms: compulsory transfer, transfer by the operation of the market and planned transfer.

Compulsory population transfer, the different forms of forced labour, the obligation to produce and deliver certain goods, the obligation to pay taxes, etc., are all examples of compulsory transfer which have played an important historical role.

Western economic growth was based on the transfer of the factors of production (labour and capital) and of products by the operation of market forces.

In theory the transfer of labour by market forces is motivated by the expectation of a different level of income. Wage differences from one sector to another and one area to another are one of the basic factors determining economic growth: these differences induce workers to change jobs and make it possible to adjust the level of employment to increasing demand and increased productivity in both space and time. If the wages expected are higher than agricultural incomes or offer a prospect of a higher standard of living than in subsistence agriculture, the exodus from the land is economically motivated.

In the Western system the labour market has worked with varying degrees of success, not without hardship and ups and downs, but it has nevertheless provided a mechanism for the basic transfers which are essential if the process of economic growth is to be maintained.

The market-controlled transfer of savings is also based on the different level of income expected from a particular investment. Large transfers have been carried out in this way by the national and international capital markets, and capital transferred by these means, whether from one sector to another or from one geographical area to another, has proved to be highly mobile.

To the voluntary transfer of capital via the market should be added compulsory transfer by taxation or even by the decision of business undertakings to plough back the whole or part of their profits in order to finance their own expansion (self-financing) rather than distributing the whole of the profits among the shareholders.

Western farmers have contributed towards capital mobility by buying public, national and foreign loan stock, by depositing money in banks and sometimes by buying shares. However, as we have already noted, the greater part of rural savings has probably been transferred by taxation, by levies imposed by landowners and merchants, by the operation of the market, to the extent that producer prices may be set at a relatively low level, and by the transfer of agricultural workers who take with them the capital which they have accumulated.

Goods and services have also been transferred via the market. Western agriculture has managed to free Europe from famine, whether structural or cyclical, and to improve the general standard of nutrition considerably (although food products have also been imported) without being subjected to a system of compulsory supply (except in one or two troubled periods).

The structure of agricultural producer markets—which was more oligopsonic (a few educated and informed buyers and a large number of uneducated and badly informed sellers offering heterogeneous goods) than competitive (a large number of educated and informed buyers and sellers marketing homogeneous goods)—goes some way towards explaining the dominated position of peasant agriculture. However, as markets became more sophisticated, the State very soon intervened in order to take action that would be in accordance with the goals of its economic policy.

A system of planned transfers, combined with a policy of 'target prices', 'various relative advantages' and often 'multiple obligations', has been brought into operation in socialist countries. 'Feasible' development objectives define the desired types of transfer from one sector or one area to another, together with the basic equilibria of full employment, funding and external trade.

Analysis of the mechanisms for the transfer of resources and goods is an integral aspect of the political economics of growth. Such analysis would however involve us in long discussions for which the present work is not the place. Let us therefore return to the role of agriculture in development.

## Relations between agriculture and industry in the development process

**129 The role of agriculture in bringing about development.** The take-off period plays a vital role in the history of economic development. Take-off may be due either to agriculture or to industry. P. Bairoch has described the part played by agriculture in this regard during the take-off period in the West. In the present historical context the question arises whether in certain countries a few key industrial sectors might not be in a position to produce the 'surplus' required to launch the process of growth and development.

In some LDCs the industrial sector has already made considerable progress. In Latin America 15–30 per cent of the national income is obtained from the industrial sector, in Asia 15–20 per cent and in Africa less than 10 per cent, with the exception of one or two countries [3, p. 37].

Furthermore, the LDCs supply 66 per cent of their domestic demand for manufactured goods, approximately 50 per cent of their demand for intermediate goods and 25 per cent of requirements for capital goods. In the 1960s economic growth was relatively rapid in some countries owing to the exploitation of their oil and mineral wealth. In Africa this is true of the Libyan Arab Republic, Algeria, Mauritania, Gabon, etc. However such growth cannot form a basis for long-term development unless it is accompanied by structural transformation of the economy and the creation of an industrial infrastructure other than that connected with the exploitation of mineral wealth.

As a sector whose role is to 'adjust' or follow suit, three basic requirements are made of agriculture: it must adjust the growth of agricultural production to that of effective food demand, adjust the size of its working population (and therefore the level of its productivity) to the demand of industry for transfer of manpower, and lastly, contribute to the other basic economic equilibria (the balance between savings and investment and the balance of payments).

If on the other hand agriculture is called on to play the role of a 'leading' sector in development, its task is much more ambitious. It must then create the surplus which will make it possible to achieve take-off in the economy as a whole.

We shall consider the role of agriculture first as a sector whose role is to 'adjust' and then as a 'leading' sector. This approach to inter-sector relations in the process of development is much more fruitful than that which argues in terms of priority for agriculture or for industry. The important thing is that each sector should fulfil the role which is assigned to it in the process of development.

### *Agriculture as a sector that 'adjusts' (the adjustment of employment and productivity in the agricultural sector to the demand of industry for transfer of manpower)*

**130 Demand for transfer of manpower.** Industrial growth implies the creation of new jobs. If a large proportion of the agricultural population lives in a semi-traditional society, practising subsistence agriculture, it should in theory be sufficient for the wages paid to be slightly higher than subsistence level to induce country-dwellers to move to new employment. The response of agriculture depends however on the availability of manpower and the growth in production necessary to supply effective demand for food and agricultural products.

The problem of agricultural underemployment or disguised unemployment in LDCs has given rise to a veritable controversy among Western economists, centring mainly on whether or not the marginal productivity of traditional agriculture can be zero.[1]

For the purposes of transfer what is important is the productivity of the individual worker and not that of the work itself: the productivity of certain agricultural tasks may be almost nil (the worker being occupied), although the worker's productivity is not nil. Moreover a rural worker may be wholly unemployed at certain periods of the year and fully or partly employed at other times. If he is only partly employed, part-time work in industry will make him fully employed and increase his income without affecting agricultural production.

If such supplementary activity cannot be found he must move to a different area to find new work and is then wholly lost to agriculture. The consequences of such a transfer are clearly illustrated in Figure 6.

This diagram shows the following possibilities: the population to the right of Nc can be transferred without affecting total agricultural production (marginal productivity of the worker zero). But since, by definition, the wages after transfer are above the average subsistence level, the worker's consumption will rise on transfer and an effective demand for agricultural products will be generated.

If the agricultural population transferred equals Nf-Nd, the population remaining will be Nd and agriculture will be unable to meet the effective demand which has emerged because, with the agricultural population at this strength, average production equals the average subsistence level. In such a situation no surplus is produced by agriculture and if industrial growth is to continue and not be impeded by inflation, either agriculture will have to be transformed or foodstuffs will have to be imported.

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[1] Lewis, Rosenstein-Rodan, Nurske and Fei-Ranis support the theory of a population with zero marginal productivity; Viner, Haberler, Schultz and Jorgenson feel that however low the marginal productivity of agricultural labour, it can never be zero.

If the agricultural population transferred equals Nf-Nc and if the remaining population is therefore at level Nc, there will be a surplus as average productivity will be above subsistence level. But if it is to be adequate this surplus must satisfy the following equations:

$$Ya - (Nc \times Cs) = Ni \times Ci$$

where Ya = food production; Nc = agricultural population; Cs = subsistence consumption per worker; Ni = industrial population; Ci = food consumption per industrial worker.

If instead of taking a given moment in time we consider a given period we know that the agricultural population may increase in absolute terms while decreasing in relative terms. The food supply situation may deteriorate in agriculture and it may prove impossible to satisfy increased effective demand for food without importing foodstuffs.

This may lead to two major disadvantages: (a) a balance of payments deficit; (b) such obvious disparities between urban and rural standards of living as to bring about a 'pathological exodus' from the land.

The increase in the agricultural population and the slow growth of productivity, in some cases combined with the destruction of rural arts and crafts by urban industry, can cause the standard of living in the agricultural sector to fall dramatically. In order to escape poverty and permanent or temporary famine conditions, and attracted by the mirage of urban life, country people flock to the neighbourhood of the large towns, waiting for employment to materialize. They form Marx's 'industrial reserve force', encamped at the gates of the towns and helping to keep wages at a permanently low level.

It is therefore clear that agriculture cannot be neglected if the necessary manpower is to be transferred, agricultural productivity improved and a pathological flight from the land avoided. A strategy for agricultural development must be implemented which aims to achieve the above objectives. This strategy will also depend on the role which agriculture must play to satisfy the increased effective demand for food.

**131 The continuity of industrial growth.** During the period of economic take-off the 'leading' sector, which produces relatively rare goods and can pay low wages, should in theory be able to make a substantial profit. This was the case in the West, where self-financing seems to have been a decisive factor at this stage. But for LDCs nowadays the situation is different: to sell their goods, they are partly dependent on foreign demand and the fierce competition on the international market can lower prices and slow down the rate of industrial growth.

However, the profits reinvested by the 'leading' sector, with the addition of State investment or subsidies (financed by domestic taxation or export duties, etc.), and possibly of external aid, should make it possible to create new jobs in the 'leading' sector and possibly to establish completely new economic sectors.

The successive waves of demand for the transfer of agricultural workers to an expanding industry can be met without increasing wages as long as the supply of labour is completely flexible, that is to say as long as disguised or open unemployment has not been absorbed, as long as the 'industrial reserve force' has not been completely mobilized. The size of this reserve force varies from one country to another and from one stage of development to another depending on various factors which determine the tendency of workers to migrate, and on the difference between urban wages and the average standard of living which causes the exodus. Models can be constructed which show how the interplay of the varying levels of productivity in industry, or real wages and of productivity and standards of living in agriculture determine the economic magnitude of the transfer of manpower from agriculture.[1]

If industrial expansion continues the agricultural sector will have to supply manpower in increasing quantities and this will only be possible if the conditions of agricultural production are altered and its productivity improved.

### *The adjustment of the growth of agricultural production to that of effective demand*

**132 The increase in effective demand.** The basic factors of total effective demand for food are population (P), national income (R), or more precisely *per capita* income ($r = R/P$), the general level of food prices (Xa) and that of other goods (Xi).

$$D = f(P, R, Xa, Xi).$$

The variation of demand in time depends on the variations of its component parts. The relationship between the increase in demand and the increase in population ($r_p$) and in *per capita* income ($r_r$), as we have seen (subsection 70) is as follows:

$$r_D = r_p + \lambda r_r.$$

Prices can be introduced by means of the price elasticity coefficient ($\lambda'$), or relative variation in demand as a function of relative variation in prices ($r_x$)

$$\lambda' = -\frac{\dfrac{dD}{D}}{\dfrac{dx}{x}} = -\frac{r_D}{r_x} \qquad (1)$$

In general, the tendency is to buy more as prices decrease: elasticity of demand in relation to prices is therefore negative.

From (1) we can deduce $r_D = -\lambda' r_x$.

The increase in demand can finally be expressed as:

$$r_D = r_p + \lambda r_r + \lambda' r_x. \qquad (2)$$

When agriculture is the sector that 'adjusts' it must respond to the increased demand with increased agricultural and food production.

$r_p$ represents the growth of the non-agricultural population, resulting both from demographic factors and the rate of transfer of the agricultural population. The urban population will increase more rapidly, in some cases much more rapidly, than the average rate of demographic increase.

$\lambda r_r$ represents the combined effect on demand of the increase in *per capita* income and the elasticity of demand for food in relation to income. The elasticity coefficient decreases as the level of income rises. In low-income countries this coefficient may be almost 1; in recent years it was approximately 0.5 for the LDCs as a whole. As long as wages remain relatively low pressure on demand is limited. But as the process of development continues, and as the 'reserve force ' is mobilized, wages begin to increase.

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[1] M. Bourdon, 'Le Paradoxe du Chômage Déguisé et ses Conséquences' [The paradox of disguised unemployment and its consequences], *Économie Rurale*, No. 87, January-March 1971, p. 57–66.

$\lambda' r_x$ represents the combined effect on demand of the variation in prices and the elasticity of demand in relation to prices.

**133 The increase of supply and demand: inflationary model.** If production does not keep pace with the effective demand for food products prices will rise and the whole economy may be caught up in an inflationary spiral. This situation can be depicted using formula (2).

Let us take $r_0$ to be the increase in supply and $r_D$ the increase in demand. The equation depicting a state of equilibrium is as follows:

$$r_0 = r_D = r_p + \lambda r_r - \lambda' r_x.$$

In this model the variable denoting adjustment is $r_x$ and we have:

$$r_x = \frac{r_0 - (r_p - \lambda r_r)}{-\lambda'}.$$

If $r_0 = 3.8$, $r_p = 4$, $r_r = 2$, $\lambda = 0.8$ and $\lambda' = 0.9$, we find that

$$r_x = \frac{3.8 - (4 + 1.6)}{-0.9} = \frac{-1.8}{-0.9} = +2.$$

Thus prices would rise by approximately 2 per cent in spite of the rapid growth of production at approximately 3 per cent per annum.

If the growth of production was only 2 per cent, prices would rise by 4 per cent. This rise in agricultural prices could well have an undesirable effect on economic growth. The proportion of wages spent on food would increase and the standard of living in towns drop.

This situation is all the more serious as there are vital needs to be met and the elasticity of demand for food, like the proportion of household budgets spent on food, is considerable. Moreover, once prices have begun to rise the process may be accelerated by speculative stockpiling. If the increase in agricultural prices cannot be contained wages and salaries will probably have to be increased and the resulting increase in the cost price of industrial products may well undermine the country's competitive position on the international market. In order to limit the rise in prices it may become necessary to import foodstuffs, thus reducing the ability to import capital goods. Inflation sparked off by increased agricultural prices may therefore slow down the process of development or even bring it to a complete standstill.

Inflationary disequilibria in agriculture have occurred frequently in LDCs in recent years. They stem from the rapid growth in demand, due mainly to increased population and the inability of agriculture to raise its productivity to the necessary level in a short space of time. Even though agriculture is not the ' leading ' sector there are many reasons why it should nevertheless be restructured: increased effective demand for food, balance of payments considerations, the transfer of agricultural workers and the danger of disparities between agriculture and industry causing a pathological flight from the land.

It is probably impossible for the industrialization process to continue unless a strategy for agricultural development is implemented. Although the stimulus for development is provided by industry it soon becomes obvious that to neglect agriculture is to run the risk of holding growth back in the short term and bringing it to a halt in the long term. This is particularly true as the process of industrialization cannot continue without expansion of the domestic market, which is to a large extent rural.

### *Agriculture as a 'leading' sector; the surplus theory*

**134 The theory of agricultural surplus.** If it is to be the 'leading' sector agriculture must be able to produce a surplus which, if properly used, will make it possible to launch the development of industry.

The theory of agricultural surplus was first propounded in the eighteenth century in the West. For the physiocrats, the earth was the only source of wealth; it is able to produce more than it costs, and therefore provide a surplus, a net product.[1] This surplus should make it possible to build up capital and, via its beneficiaries (the sovereign, landowners), serve as a basis for the general diversification of economic activity.

Adam Smith writes: 'It is the surplus produce of the country only, or what is over and above the maintenance of the cultivators, that constitutes the subsistence of the town, which can, therefore, increase only with the increase of this surplus produce'.[2] He goes on to denounce the idle who consume a large proportion of this surplus without bringing about an increase of wealth.

John Stuart Mill's definition is very close to that of Smith: the difference between gross product and what is required to support those involved in production.[3]

Karl Marx uses this concept and gives it a moral slant which leads to the concept of the rate of exploitation.[4] As he puts it:

> The Physiocrats are still on the right track when they claim that all production of surplus-value, and consequently all capital formation, is based on the natural productivity of agricultural labour. If man were not able, in one day's work, to produce more means of subsistence, thus, in the narrowest meaning of the term, more agricultural products than each worker requires for his own reproduction; if the total effort expended in his everyday tasks sufficed to supply only his basic personal needs, there could be no question of surplus-product or of surplus-value. The capacity of agricultural labour to supply more than the worker's individual needs is the basis of society in general and of capitalist production in particular.[5]

The concept of an economic surplus, which fell into disuse in the twentieth century, has recently been resurrected as a useful explanation for the process of development in backward societies.[6]

Celso Furtado takes up once more the classic concept of the 'surplus product', and says that it is 'universally acknowledged' that such a surplus can exist in any society. He writes that this surplus is appropriated, in one way or another, by a minority and that 'this extremely simple and universally acknowledged phenomenon is the basis for the process of the accumulation of capital.[1]

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[1] M. Quesnay, *Maximes Générales de Gouvernement Économique Agricole* (General rules for the economic management of agriculture), 1774.

[2] Adam Smith, *Inquiry into the Nature and Causes of the Wealth of Nations*, 1776, Book III, Chapter I.

[3] John Stuart Mill, *The Principles of Political Economy*, 1848.

[4] Furtado, op. cit., p. 80.

[5] Karl Marx, *Capital*, Book III, Chapter XVII.

[6] Reference may be made in particular to P. Baran, C. Bettelheim, and Celso Furtado.

If the surplus was uniformly distributed in a given society it would be used up. In traditional societies accumulation was based on a semi-feudal system or a system of slave labour, or on other systems in which the surplus is transferred by force to benefit the ruling class. However, as we have seen, this surplus was not used to promote economic growth but to enable the privileged group to increase its consumption and indulge in prestige spending.

We must now determine how, in the present, historical context in LDCs, the agricultural surplus can be used to promote over-all economic development.

**135 The concept of a surplus.** In our analysis of the role of agriculture as the 'leading' sector in development we shall refer to the difference between agricultural production ($Y_a$) and farm consumption ($C_a$) as the transferable agricultural surplus ($S_a$):

$$S_a = Y_a - C_a.$$

The surplus represents that part of agricultural production which is transferred via the market or in accordance with a plan and corresponds to commercial or market-oriented agriculture.

If $p$ is the average producer price, the monetary return on the agricultural surplus at producer prices, or in other words the 'revenue' of farmers, is equal to $S_a p$.

Most authors show an interest in the use made of the monetary return on the agricultural surplus, but it seems more interesting to consider the agricultural surplus processed and distributed, or the monetary return on the food surplus.

If $t$ is the cost of processing and distributing the agricultural products we can say:

$$S_{ad} = S_a p + t$$

where $S_{ad}$ represents the monetary return on the processed and distributed agricultural surplus, calculated at final consumer prices.

If we wish to adopt a more dynamic approach we must consider the relative growth of agricultural production $r_{Y_a}$ and of food consumption on the farm ($r_{C_a}$):

$$r_{Y_a} = \alpha r_{C_a} + (1 - \alpha) r_{S_a}$$

$$r_{S_a} = \frac{r_{Y_a} - \alpha r_{C_a}}{(1 - \alpha)}.$$

The increase in the agricultural surplus is determined by the increase in production and the weighted increase in farm consumption.

We shall now examine the formation of the surplus, its transfer and its use, in that order.

### *Formation and growth of the agricultural surplus*

**136 Growth of the agricultural surplus.** The growth of the agricultural surplus implies that total agricultural production increases more quickly than consumption in the agricultural sector. It should not moreover be forgotten that the surplus cannot increase unless there is an increase in effective demand for food. When agriculture is the 'leading' sector in the process of development the most important question is how agriculture can contribute towards the growth of non-agricultural sectors in such a way that their growth should in turn act as a stimulus for agricultural expansion. The interplay between the different sectors within the process of over-all development thus emerges very clearly.

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[1] Furtado, op. cit., p. 81.

The increase in total consumption by farmers will depend on the increase in their numbers and on the increase in *per capita* consumption. If the rate of population growth in the agricultural sector is higher than the rate of transfer to other sectors, the agricultural population will increase and the subsistence sector, although decreasing in relative value, will increase in absolute value.

If the productivity of agricultural labour increases farmers will probably tend to increase their own *per capita* consumption, particularly if their standard of living is very low. Moreover the increase in agricultural production will call for greater activity and help to absorb underemployment, etc., which will tend to increase food requirements. Nutritionists distinguish between the intake of food necessary for survival and that necessary for production, and Michel Cépède has introduced the concept of the production multiplier, or the relationship between the level of nutrition (C) and the work done (T):

$$m = \frac{\Delta \mathrm{T}}{\Delta \mathrm{C}} \text{ therefore } \Delta \mathrm{T} = m\Delta \mathrm{C}.$$

In the LDCs workers are often ill and under-nourished and their physical resistance is low. Experience has shown that improvement of the worker's diet, corresponding basically to investment in growth, has a major effect on output.[1]

If agricultural output is to be increased it is only reasonable to expect the food consumption of the rural population to increase as well: this means that an exceptional drive will be needed on behalf of agriculture if the agricultural surplus is to be increased. Attention should not be devoted solely to developing the market-oriented agricultural sector, as is often the case. Efforts should also be made to modernize the subsistence sector and home economics in rural areas. It is most regrettable that home economics for rural areas, which should teach diversification of the diet (family allotments) and the improvement of food intake (preparation of meals), together with the hygiene, health and accommodation of the family, is often neglected in LDCs.

Home economics for rural areas constitutes however in many ways a contribution towards development by affording a lever wherewith to boost the surplus and improve rural standards of living. There is room for energetic action in this field.

A final reason for stimulating growth in agricultural production is that, as we know, harvests vary considerably from year to year. Buffer stocks must be formed to counter the threat of sudden famine and avoid discontinuity in supplies. Irregular supplies of food may have serious consequences on price levels, sparking off short-term inflation which could in certain circumstances become in-built inflation.

In order to obtain the maximum surplus vigorous action must be taken in the sphere of production. It may also be necessary, during the take-off period, to limit the consumption of farmers; to this end various measures could be taken which would ensure that most of the harvest is transferred out of the agricultural sector.

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[1] Michel Cépède and M. Lengellé, *Économie Alimentaire du Globe. Essai d'Interprétation*, Paris, Médicis, 1953, 654 p.

One of the most important but also one of the most difficult problems a development policy has to solve is the distribution of the fruits of increased productivity in the agricultural sector in such a way as to promote over-all economic growth by transfer to non-agricultural sectors while at the same time improving the well-being of farmers.

The increase in the surplus will correspond to the expansion of market-oriented agriculture. This type of agriculture has existed for a long time in the LDCs; it is the result either of the transformation of the traditional subsistence agriculture or of the introduction of export-oriented agriculture (plantations).

An increase in commercial production in the agricultural sector implies the generation of effective (cash) demand. If increased demand is not generated, agricultural prices will fall, farmers will be discouraged and the growth of agricultural production will be held back.

Roughly speaking this demand may be generated in one of two ways, according to an 'open' or a 'closed' model.

**137 Open model.** In the open model, export-oriented agriculture is the real 'leading' sector in the economy. Agricultural exports can be used to augment the budget (export duties) and to produce the foreign currency needed to import capital goods. In this way agriculture contributes to the process of industrialization via foreign markets. This process may reinforce a dualistic structure if exports are provided basically by plantation agriculture; but in many cases, as we have seen, peasant agriculture tends to play an important part.

Export-oriented agriculture, of a semi-capitalistic or peasant type, has contributed towards the successful economic growth of several countries in the West. But the situation now is radically different from that prevailing in the nineteenth century and where the growth of LDCs is based on agricultural exports it has been described as an 'evanescent process', even if the prospects are good for some products (products of forestry and stock-rearing, for example). The processing of agricultural products, in addition to constituting a first step in industrialization, also means that a return on the value added can be obtained in foreign currency. The fact remains that the deterioration in the terms of trade is a cause of great concern for many countries.

**138 Closed model.** Another possibility is to base the development of industry on that of agriculture by expanding the internal market. This implies that productivity and income in the agricultural sector rise sufficiently rapidly for agriculture to become a market for industrial products. In such cases the industries to be developed are industries producing consumer goods (clothing, footwear, accommodation, furniture, household equipment, radios, cycles, etc.) and goods for use in agriculture (machinery, fertilizers, animal feedingstuffs, etc.). The emergence of demand in the agricultural sector can thus help to create jobs in industry and can contribute towards financing the investment necessary for this process.

Increased income in the agricultural sector leads to a growth in demand for industrial goods, so that a time comes when locally manufactured goods can with advantage replace imported goods.

Provision of the equipment needed by farmers involves the establishment of trade channels and the development of a network of craftsmen to service the various machines and appliances. Lastly, the public authorities will be able to use the increased State revenue from taxes on agricultural goods and products to accelerate provision of infrastructures such as roads, electricity supplies, etc., and basic services such as education and public health.

If a system of State capitalism operates, in which a major role falls to the public authorities, they can even take steps to create a heavy industry as the basis on which a diversified economy can subsequently develop.

This analysis shows that by creating a demand for industrial goods agriculture can stimulate the development of a process of industrialization and in so doing create the conditions for increased effective demand for food, which will in turn stimulate and bring about changes in the agricultural sector.

Development based on agriculture is the result of an 'endogenous' transformation of the national economy; it implies radical and widespread changes in structures and mental attitudes, which are the very essence of development.

Agriculture played a decisive part in the economic development of the West. But this was only made possible by two revolutions (in technology and land policy) and by a long and arduous process of evolution (from a semi-feudal agricultural system to the semi-capitalistic system in England and peasant farming on the Continent of Europe).

The distinction between the closed model and the open model is to some extent an academic distinction; in fact a mixture of the two is most common. If development policy is to be successful all resources must be mobilized and all possibilities of growth explored.

### *Transfer of the monetary return on the surplus*

**139 The distribution and processing of agricultural and food products.** The surplus, which has been increased to a maximum by measures affecting production and subsistence consumption and by the simultaneous creation of effective demand, must be processed and distributed to the final consumer.

This physical transfer requires the creation of technical and economic infrastructures. The technical infrastructure will involve the construction of plants to process agricultural and food products, warehouses and storage centres, means of communication, a retail network, etc. W. W. Rostow[1] writes that development calls for revolutionary transformations in two non-industrial sectors: agriculture and transport.

In Europe the improvement of navigable waterways, then of the road network during the take-off period, and later on the construction of railways, played a decisive role in the development of market-oriented agriculture and in the supply of food to urban centres.

Economic infrastructure implies the organization of markets or the establishment of institutions responsible for planning. There is much to be done in the this field in the LDCs: we shall deal with this question at a later stage. The question we wish to consider more especially now is that of transfer of the monetary return on the surplus.

**140 The monetary return on the surplus.** This concept may be used to refer to the revenue obtained by farmers or to consumer expenditure on food-stuffs: the latter gives a more complete picture of the role of the surplus in the process of development. Taking $t$ to be the cost of processing and distribution, we have written that:

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[1] Rostow, op. cit.

$$S_{ad} = S_a p + t.$$

On this basis it is possible to compile Table 35.

The value added by agriculture (V) can be broken down into the value available to farmers ($V_g$) and the value transferred to owners ($p$) of agricultural assets (land, working capital), including money-lenders, etc.: $V = V_g + p$.

The distribution of the monetary return on the food surplus can now be expressed as follows:

$$\begin{aligned} S_{ad} &= V_g + p + a + t \\ &= V + a + t. \end{aligned}$$

If we accept the concepts used in standardized accounting for the agricultural sector, $V_g$ represents the value added to the market price. This aggregate must where appropriate be adjusted in respect of subsidies and indirect taxes, and depreciation deducted from it, in order to obtain the net agricultural income of farmers and agricultural workers ($R_g$).

We have agreed that in Table 35 column 1 represents the distribution of the monetary return on the food surplus and column 2 the net revenue based on this return. Columns 3, 4, 5 and 6 represent the use of the net revenue by the different socio-economic categories: for direct taxation (T), food consumption (Ca), consumption of industrial goods (Ci) and net savings (E).

The food consumption of farmers is not shown in Table 35, in accordance with our definition of the agricultural surplus. This is a convenient formula for developing countries; another would be more suitable for developed countries.

Models could be constructed on the basis of this table to illustrate concrete situations or adumbrate development policies. Obviously the pattern of monetary flows resulting from the agricultural surplus will depend on the social structure (importance and role of landowners), on the structure of the 'food sector' (relative importance of craft industries or of agricultural and food industries), on market structures (the fruits of increased productivity may not be retained if these structures encourage domination), on the role of the State (subsidies, direct and indirect taxation) and on the behaviour of the different socio-economic categories (propensity to consume and to save).

TABLE 35. Sources and uses of the monetary return on the food surplus ($S_{ad}$)

| Socio-economic categories | Sources | | Uses[1] | | | |
|---|---|---|---|---|---|---|
| | Distribution of $S_{ad}$ (1) | Corresponding revenue (2) | T (3) | Ca (4) | Ci (5) | E (6) |
| I. Farmers ($g$) | Vg | Rg | Tg | 0 | Cig | Eg |
| II. Landowners ($p$)[2] | $p$ | Rp | Tp | Cap | Cip | Ep |
| III. Craftsmen ($a$)[3] | $a$ | Ra | Ta | Caa | Cia | Ea |
| IV. Distributors and processors ($t$)[4] | $t$ | Rt | Tt | Cat | Cit | Et |
| TOTAL | $S_{ad}$ | Rs | T | Ca | Ci | E |

1. T = direct taxation; Ca = food consumption; Ci = consumption of industrial goods; E = savings.
2. Owners of agricultural assets, whether or not in the form of land, and financiers lending money to farmers.
3. Craftsmen (or industries) supplying agriculture with the products necessary for farming.
4. Distributors and processors of agricultural and food products.

If quantitative models are used the role of the agricultural surplus and of farmers in the process of development may be better analysed by showing the distribution and final destination of the monetary return on this surplus. The agricultural sector may have a direct effect on the process of industrialization by purchasing industrial consumer goods (Ci) and producer or capital goods ($a$), by developing industries and distribution networks based on agricultural and food products ($a + t$) and by transfers of savings to benefit industrialists. It may also have indirect effects by contributing towards the capacity to purchase consumer goods of industrial origin and towards the financing of development.

This table shows that the financing of development by taxation implies that the tax assessment system should be related to the structures governing the distribution of wealth: where traditional social structures survive (i.e. where landowners play an important part) or the farmers are dominated by the market, the taxable profit generated by the surplus may quite easily have found its way into a different sector. What is then needed is the will and the ability to apprehend the profit wherever it is to be found. Land reform is one possible way of altering the distribution of wealth and with it the movement of the money generated by the agricultural surplus. Other types of reform and intervention may also markedly affect the distribution of the surplus: the organization of agricultural markets, a price policy, the introduction of credit institutions, etc.

State intervention in the spheres of production and investment is a decisive factor in the LDCs; we shall therefore examine the different aspects of fiscal policy.

**141. Fiscal policy.** Table 35 suggests that taxation may take the form of direct taxation levied on the income of the different social categories which benefit from the surplus, relate to property, consumption and saving or take the form of indirect taxation levied on products at the different stages of development.

First of all the principle of taxation must be determined. The principle of taxation corresponds to the source of tax revenue: this may be land, income. the finished products, etc. The choice of the tax source must be made bearing certain criteria in mind. It must be easily identifiable, and must conform to the aims of economic development as well as being in accordance, in most cases, with considerations of social justice (for example, graduated income tax).

Historical analysis shows that tax structures change with the process of development. In traditional societies tax revenue is obtained mainly from State monopolies, land, cattle and certain products.

Indirect taxation tends to become more important in LDCs as more money comes into circulation and production increases: external trade and internal transactions are the main sources of tax revenue, to which can be added in certain cases the earnings of firms, particularly those operating at international level (oil and mining industries). Table 35 shows direct but not indirect taxation.

On the assumption that development implies increased investment it has been suggested that income which is spent should be subject to graduated taxation whereas income which is invested should be exempt from tax: this system tolerates the accumulation of wealth but places a limit on consumption, trying to ensure that wealth is used to promote development. The application of such a principle raises many problems.

When analysing the relationship between taxation and development it i very important to distinguish between the person who pays the tax officially and the person who pays it in fact (the problem of tax rejection or the impact of taxation). This distinction will depend on the structure of the economy and on social relationships. For example, if taxation takes the form of a duty payable on exports, and if agriculture is a dominated sector, the price paid to the farmer will be equal to the export price minus the profit and expenses of the middleman, including the tax he has paid. The real burden of taxation is therefore passed back to the farmer. The result is very similar when an official marketing organization pays farmers fixed prices, minus a tax. And the same may occur when the landowner in fact exercises considerable power over persons and goods.

**142 Agriculture and fiscal policy.** When agriculture is the 'leading' sector and the main source of wealth it is also the main source of tax revenue. If the process of development results from a system of State capitalism, public expenditure increases rapidly; it may even increase faster than GNP, and so make further taxation necessary.

Taxation of farmers, who may also be bearing the burden of taxes officially paid by others, may discourage them and hold back production. The difficulty in taxing agriculture is therefore how to reconcile the need to finance development with the need to encourage production. Some countries have introduced surtax on land belonging to absentee landlords, on undeveloped land, on unimproved land which is capable of improvement, etc., while land recently developed or improved is exempt from tax for a certain period of time. Graduated taxation of large estates may be an incentive for division into smaller plots, which would make for more efficient management.

> Land taxation systems are sometimes, however, dominated by expediency rather than by the need for equity and incentives for agricultural productivity ... Systems actually used sometimes have a discouraging influence on output. Landlords' incomes may remain little changed at the expense of the incomes of farm tenants and workers and the higher food prices paid by city workers.[1]

Tax reforms may be essential if agriculture is to be the 'leading' sector.

**143 The food surplus and growth.** Farm workers, landowners, tradesmen and craftsmen may all contribute to over-all growth and to the process of industrialization by expanding the market for industrial goods. But the basic contribution depends in the last resort on the monetary return on the invested surplus, which makes it possible to finance new jobs outside agriculture. Savings (E) (column 6 of Table 35) may originate with the various social categories which benefit from the surplus.

The extent to which these categories contribute to over-all savings depends on the distribution of wealth and their propensity to save. In LDCs where there has been no attempt at land reform or at market reform, landowners and merchants are probably the main potential savers. Participation in the process of industrialization will then depend on their propensity to spend and to save. Part of their savings may be unproductive, invested abroad, or else used to indulge in speculative hoarding, etc. In the LDCs institutional reform is necessary more often than not if savings are to be mobilized.

If $I_E$ represents State investment and $I_p$ private investment, both financed by the monetary return on the surplus, the invested return can be expressed as:

$$I_E + I_p = I$$

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[1] FAO, *The State of Food and Agriculture, 1967*, p. 106, Rome, FAO.

and the proportion of the surplus which is invested ($s$) as:

$$s = \frac{I}{Sa} \qquad I = sSa = \Delta K.$$

Using a Harrod-Domar equation, in so far as this surplus is the only basis for investment, we can say:

$$sSa = \Delta K$$

$$\frac{sSa}{\Delta Y} = \frac{\Delta K}{\Delta Y} = k = \text{incremental capital/output ratio}$$

$$sSa = k\Delta Y$$

$$\Delta Y = \frac{sSa}{k}.$$

Dividing by Y we get:

$$\frac{\Delta Y}{Y} = \frac{sSa}{Y} \cdot \frac{1}{k}. \tag{1}$$

Formula (1) clearly illustrates the role of the surplus as a factor of growth; this role depends: (a) on the size of the surplus in the national economy; (b) on the proportion of the surplus which is invested; (c) on total investment, which depends on the two factors given above; (d) on the capital/output ratio.

Simple arithmetic shows that it would be idle to base rapid growth of the national economy as a whole on the agricultural surplus alone. In a country where agriculture represents 60 per cent of the GDP and market-oriented agriculture 50 per cent of the GDPA and where the capital/output ratio equals 3, application of formula (1) shows that 50 per cent of the surplus would have to be invested to obtain a growth rate of 5 per cent.

This simple calculation shows how essential it is that all prestige spending and squandering of economic resources should be eliminated if development is to be financed. It does however appear at the same time that development cannot be successful if exclusively agricultural sources of finance are used. These general statements should be examined more closely in the context of each different country and simple models might help to clarify the problem.

As we have already said, successful development implies the mobilization of all resources and the exploration of all possibilities. In certain countries agriculture could make a considerable contribution to over-all growth and its importance should be neither underestimated nor overestimated.

### *Use of the invested return on the surplus*

**144 The effectiveness of investment.** The effectiveness of the invested return on the surplus depends in the last analysis on the short-term effectiveness of the investments and their role in the long-term development of the industrialization process.

Industrialization poses problems in regard to the choice between heavy and light industry, between directly productive investments, investment in economic infrastructure (communications, energy, etc.) and social investments (schools, hospitals, etc.), between large and small industries, between concentrating industry in 'growth poles' and spreading it relatively thinly over the entire country, etc.

Industrialization policy cannot be dealt with in this document in the depth which it requires. The most we can do is to comment more particularly on the relationship between the industrialization process and agriculture.

If growth is based on the agricultural surplus, industrialization must satisfy the increased agricultural demand for capital and consumer goods and ensure the processing of agricultural and food products. Expansion of the agricultural and food industries will therefore be necessary.

The mode of industrialization chosen affects the rate of transfer of agricultural workers. The establishment of industry in rural areas, when this is possible, makes it easier for country people to enter industrial employment and gives them alternative occupations and sources of income.

The economic advantage extracted from agricultural operations depends in the last analysis on the effectiveness of the invested return on the agricultural surplus. If the extra effort made in the agricultural sector were to result in the construction of magnificent new palaces and the squandering of economic resources, whether to satisfy personal vanity or through administrative incompetence, the conditions prevailing in the traditional society would not have been radically altered.

In LDCs where State capitalism plays a preponderant role, the government and the public authorities bear a heavy responsibility for the implementation of a development policy which should use the work done in the agricultural sector to bring about changes in structures and mental attitudes, thus equipping society to continue along the path it has begun to tread.

## Check test

| Statements | True | False | Don't know | Subsection |
|---|---|---|---|---|
| 1. Balanced growth implies the adjustment of supply to demand in each sector. | | | | 114 |
| 2. 'Technological options', i.e. choices as to method of development, influence the rate at which jobs are created. | | | | 116 |
| 3. 'Leading' industries stimulate the economy solely via the effect of income and investment. | | | | 121 |
| 4. A geographical 'growth pole' is created automatically by the establishment of 'leading' industries. | | | | 122 |
| 5. In LDCs manpower can always be transferred from agriculture to industry without affecting total agricultural production. | | | | 130 |
| 6. In LDCs agricultural price increases are due mainly to the fact that the coefficient of elasticity of food demand is very high. | | | | 133 |
| 7. The agricultural surplus equals the revenue of farmers less their expenditure. | | | | 135 |
| 8. The monetary return on the surplus is equal to expenditure on food. | | | | 140 |
| 9. The whole of the monetary return on the surplus is invested. | | | | 143 |

## Revision exercises

20. If the marginal propensity to consume is 0.85 and the marginal propensity to save 0.15, calculate the multiplier effect on spending when income increases by 100 francs.

21. The non-agricultural population is increasing at a rate of 4 per cent per annum and *per capita* income at a rate of 2 per cent per annum. If the supply of agricultural products increases by 2 per cent per annum and the elasticity of demand is 0.8 in relation to income and $-0.9$ in relation to prices, by how much will prices rise?

22. In an LDC, market-oriented agriculture represents 50 per cent of the GDPA. If total agricultural production rises at a rate of 5 per cent per annum and subsistence agriculture increases at the same rate as the population, i.e. 3 per cent, by how much will the surplus increase?

23. If total agriculture represents 60 per cent of the GDPI and market-oriented agriculture 50 per cent of the GDPA, calculate what proportion of the surplus has to be invested to obtain a growth rate of 5 per cent in the economy as a whole, given that the capital/output ratio is equal to 3.

## Topics for group discussion

1. Which of the 'technological options' (alternative methods of development) for agriculture tends to be favoured in your region?
2. Make a list of arguments in favour of giving priority to agriculture.
3. Using Figure 15 as a basis, discuss the process of development in your country.
4. What in your view are the reasons underlying transfers of manpower and capital, and how are they organized? Are there compulsory transfers? If so, what forms do they take?
5. Can agriculture play the role of 'leading' sector in your country? Give reasons for your answer.
6. How is the monetary return on the surplus distributed? Use Table 35 as a basis for your discussion.

# 3

# Agricultural development strategy

**145 Agrarian transformations and Western development.** Economic take-off in the West was based on the industrialization process and made possible by the 'agricultural revolution', which was marked by both technological and social change.

In England the Enclosure Acts of the seventeenth and eighteenth centuries, which entitled landowners to fence in their fields, particularly in connexion with the development of fodder growing and animal husbandry, led in fact to the establishment of vast landed estates, which set English farming on a semi-capitalistic course. These large estates were kept in being by the inheritance system, which sanctioned the law of primogeniture (transmission of property to the eldest son of the family) and that of entailment, under which the testator may decide to pass down his estate not only to his immediate heir but also to the latter's descendants. In 1914, practically the whole of Great Britain belonged to four or five thousand people, with half of Scotland in the hands of less than a hundred owners.

The technological model of English agriculture (the new agriculture) spread in Europe during the eighteenth and nineteenth centuries. Its adoption was made easier by the French Revolution and the consequent substitution of peasant farming for the semi-feudal pattern. However, this was only the outcome of a long struggle lasting about a century, the main milestones in which were as follows:

1. The abolition of serfdom and feudal privileges (serfdom, which had sometimes fallen into disuse, particularly in England and France since the fifteenth century, was statutorily abolished in France in 1789, in the 1840–50 period in Eastern Europe, and in the second half of the nineteenth century in Russia).
2. Land reform entailing the abolition of joint servitudes, the distribution of communal land and usually the consolidation of the family estate or holding.
3. Adoption of the Napoleonic Code, which established the principle of the equal division of land among the successors (and indeed led in the nineteenth century to the excessive fragmentation of peasant holdings).
4. The enactment of rural leasehold regulations governing relations between landowners and peasants.
5. Improved training and information of farmers through free and compulsory primary education and the establishment of extension services to spread the new technology (late nineteenth century).
6. The development of institutional credit facilities and market control (from the late nineteenth century on, farmers in Europe began to organize themselves and established associations, co-operatives and trade unions to defend their economic and general interests).

**146 Agrarian transformations in the LDCs.** In order for farming to play its part in the general development process, agricultural and food production has to be increased, as does labour productivity. If agriculture serves as the 'leading' sector, increased production and higher productivity are prerequisites for rural development. If on the other hand its role is to 'adjust' and follow suit, the growth of its production and productivity must be adapted to the rate of growth of industrial production.

Consideration of the function of traditional agricultural growth has shown us that though technology remains relatively constant, agricultural production is subject to the law of non-proportional returns. Traditional society tends towards a Malthusian-type economic situation or, in extreme cases, is set on a disaster course. Obviously no development process can be based on traditional agriculture.

The basic objectives of development strategy are accordingly to modify the technological conditions of production, which usually implies changes in modes of production or in the socio-economic systems formed on the basis of the traditional economy.

Whatever their socio-political philosophy, most countries acknowledge that the process of change to be applied is so complex, and that the role incumbent on the State is so considerable, that a plan is an essential requirement for organizing social economic change—though naturally, planning objectives and procedures differ from one country to another, depending on the method chosen for development.

In this chapter we shall therefore, after an introductory section on method, consider in turn technological change, socio-economic change and the planning of development.

## Introductory considerations on method

### *Production functions and coefficients*

**147 A simplified presentation.** The production function in a traditional economy is formulated as follows:

$$Y = N\varphi\left(\frac{S}{N}\right)$$

where Y = production; S = cultivated area; N = number of workers.

This formula implies that the capital per manpower unit is relatively small but, above all, relatively constant, so that it does not represent a production variable.

The production function in a progressive economy is more complex and we shall consider step by step how it is built up and what it tells us.

Let us first take a simplified function with two factors. The ratio of production to production factors (primary inputs) in a given period of time is expressed as:

$$Y_t = f(L_t, K_t) \qquad (1)$$

where $L_t$ = quantity of labour; $K_t$ = quantity of capital.

With this presentation we can define a number of fundamental coefficients which we shall call production coefficients. These are of three kinds and each may be either average or marginal (incremental).

*Coefficients of structure.* These express the structure of the combined primary inputs. In the case of expression (1) there is only one coefficient of structure, the average quantity of capital per manpower unit:

$$k_1 = \frac{K}{L}$$

or the marginal quantity:

$$dk_1 = \frac{dK}{dL}.$$

This ratio is of great interest in growth analysis and is sometimes known as the capital-intensity coefficient.

*Input-output coefficients.* These express the quantity of factors (inputs) necessary to obtain one unit of output. In the case of expression (1) there are two basic factor utilization coefficients:

the capital/output ratio, $k = \frac{K}{Y}$, $dk = \frac{dK}{dY}$

the labour/output ratio, $l = \frac{L}{Y}$, $dl = \frac{dL}{dY}$.

Both are of great interest in growth analysis, particularly the capital/output ratio, owing to the shortage of capital in the LDCs.

*Productivity coefficients.* These express the quantity of output obtained per factor unit (unit of input) and are thus the inverse of the input-output coefficients.

A distinction is drawn between partial measures of productivity (productivity of labour: $w$; and efficiency of capital: $f$) and aggregate measures of productivity or output per factor unit (R)

$$w = \frac{Y}{L} \qquad dw = \frac{dY}{dL}$$

$$f = \frac{Y}{K} \qquad df = \frac{dY}{dK}$$

$$R = \frac{Y}{C} \qquad dR = \frac{dY}{dC}$$

C = total factor cost.

Only aggregate measures of productivity, giving output divided by all production factors, are scientifically acceptable. Partial measures of productivity, though scientifically inaccurate (the output resulting from several factors is ascribed to a single factor), may nevertheless be very useful.

**148 Agricultural production function.** If instead of viewing the economy as a whole, we consider the production function for a particular sector, such as agriculture, we must take account of purchases made by this sector from the other sectors of the economy (PS):

$$SP_t = f(L_t, K_t, PS_t). \tag{2}$$

Sector production (SP) is a function of labour, of the capital used and of the purchases of agriculture from the other sectors. The ratio PS/SP represents the relative volume of current purchases by agriculture in relation to sector production. This coefficient is of great interest in characterizing types of agriculture and levels of development. It is usually below 5–10 per cent in the LDCs but may top 50 per cent in the advanced countries.

Expression (2) may also be written in the form:

$$SP_t - PS_t = VA_t = f(L_t, K_t). \tag{3}$$

This means that the value added by agriculture (VA), which is equal to sector production minus current purchases, is a function of the labour and capital devoted to agriculture.

Expressions (2) and (3) can be formulated more explicitly by disaggregating labour and capital. The capital used in agriculture can be broken down into land capital (Kf), fixed working capital of agricultural origin (Ka) and fixed working capital of industrial origin (Ki). Fixed working capital of agricultural origin is mainly composed of the 'livestock fund', and a fixed working capital of industrial origin by all the machinery and appliances used in production. To the fixed working capital must be added the circulating capital, consisting of the stock of current purchases and agricultural produce available at the time of reckoning (Kc).

With these new symbols, expression (2) reads:

$$SP_t = f(L, Kf, Ki, Ka, Kc)_t. \tag{2'}$$

This formula reveals new coefficients characterizing types of agriculture and levels of development. As development proceeds, the relative importance of land capital tends to diminish and that of working capital to increase. Capital of industrial origin also tends to play a growing part in agricultural production.

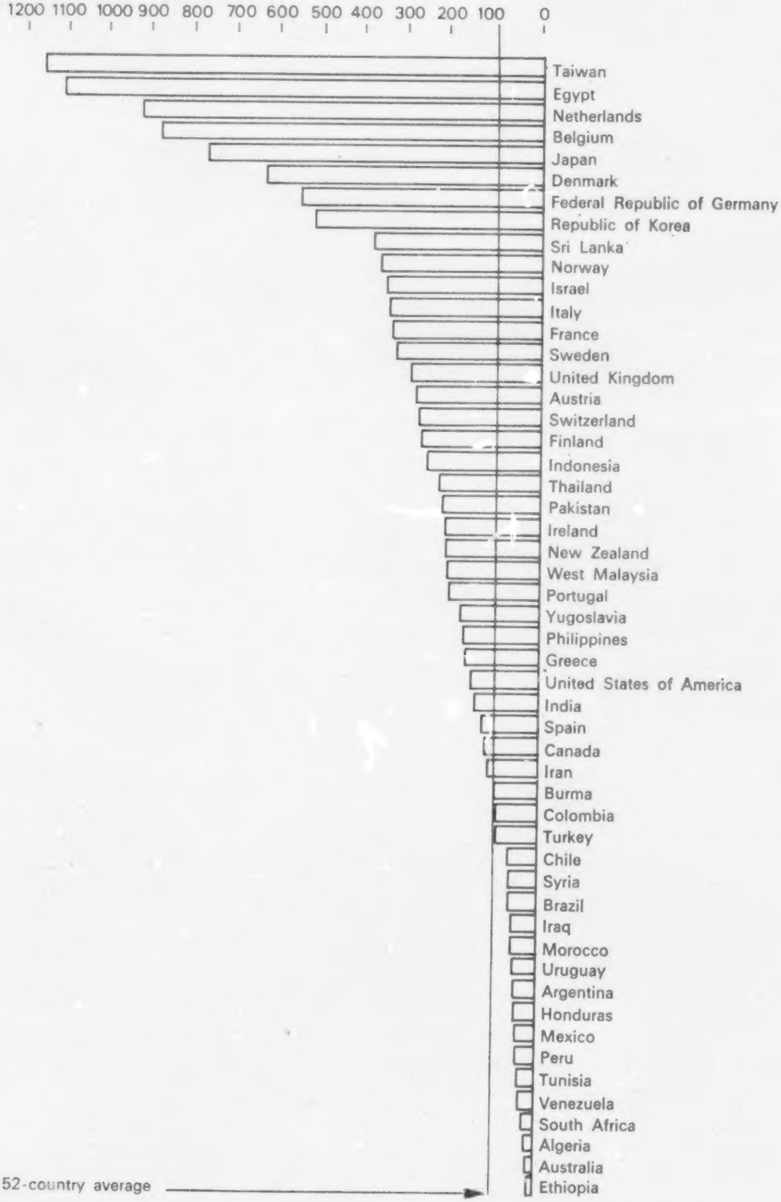
**149 Productivity of land and productivity of labour.** Measures of agricultural productivity are usually partial, being concerned with the productivity of land, labour or capital. This is because it is difficult to arrive at aggregate measures of productivity, for want of sufficient data, and also because these partial measurements are helpful in characterizing types of agriculture. The items most often calculated are productivity of land and productivity of labour. Calculating the productivity of capital comes up against specific difficulties (the wide variety of ways in which capital is used, problems of assessing capital assets and their depreciation, etc.).

Figure 16 makes it possible to compare the productivity of land and labour for a number of DCs and LDCs. The criterion used is that of final agricultural output per hectare of land and per adult male agricultural worker.

The productivity of land depends on harvest yields and intensity of cropping, estimated for instance on the annual number of harvests. In some LDCs, such as Taiwan, Egypt, the Republic of Korea and Sri Lanka, the productivity of land is high. Generally speaking, the higher the population pressure is, and particularly the effective food demand per hectare, the higher the productivity of the land tends to be.

The productivity of labour depends on the productivity of the land and the area worked per person. Countries with low productivity per hectare may nevertheless have very high productivity per worker. This applies to New Zealand, Australia, the United States and Canada. The productivity of labour is high in these countries owing to the extent of the resources available per worker.

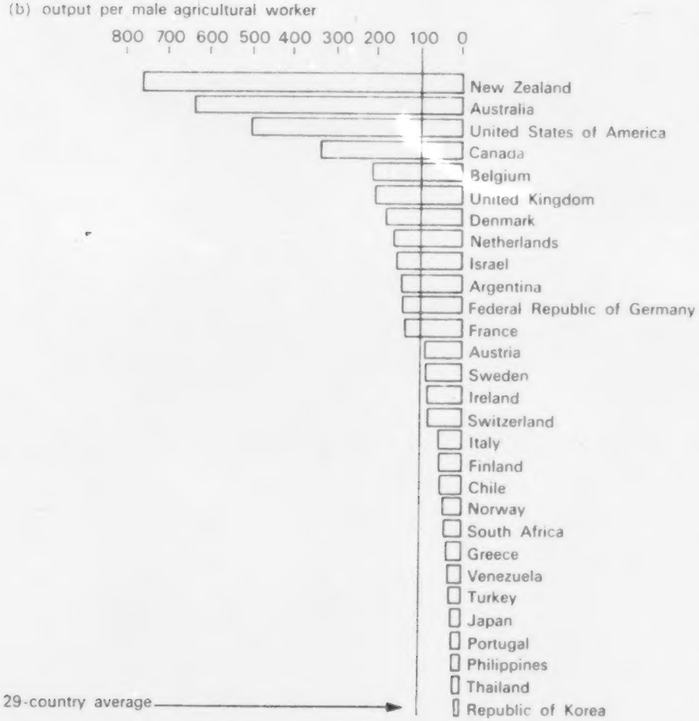
FIG. 16. Gross output per hectare of agricultural land and per adult male agricultural worker (bases, average of all countries = 100)



(a) output per hectare

These diagrams are based on FAO indicators of agricultural output. Gross output per hectare is the average for the period 1962–66. Gross output per male agricultural worker draws on data generally dating back to 1960–62.

Comparison of diagrams (a) and (b) shows that countries with low productivity of land enjoy high productivity of labour. The LDCs for which data per hectare and per worker are available (Republic of Korea, Thailand, Philippines, Turkey) have a relatively high productivity per hectare and a relatively low productivity per worker. Taiwan and Egypt have a very high productivity per hectare, Venezuela low productivity of land and of labour, etc.



*Source:* FAO, *The State of Food and Agriculture, 1968*, p. 78, Rome, FAO.

Generally speaking, it is relatively high in Europe since industrial growth has reduced population pressure in the countryside while bringing about increased output per hectare.

The basic characteristic of the LDCs is their low productivity of labour, which is generally due to the low productivity of land (but not always, as we have seen) and to the small area per worker. The few LDCs for which information is available rank low on the scale as regards productivity per worker (Fig. 16).

The low technological standard, agrarian structures, population pressure in the countryside, bound up with high population growth, and the lag in creating non-agricultural jobs, together with the relatively low level of effective food demand per agricultural worker, all go to explain this situation.

Aid in the form of food-stuffs or a large volume of net imports may curb efforts to increase agricultural productivity. It is often hard to assess how far imports of food-stuffs are complementary to or compete with domestic output.

P. Bairoch has calculated levels of net food productivity (seed excluded) in initial (vegetable) calories per male member of the working population, and shown that though all the LDCs were above the minimum production level meeting physiological needs, in some of them productivity was below the threshold level at which there was no potential risk of famine (taking harvest fluctuations into account) and that, on the whole, agricultural productivity levels in the LDCs were well below those obtaining in Europe during the period of economic take-off in the West.[1] His work has helped to draw attention to the need to increase agricultural productivity if the development of the LDCs is not to be slowed down or brought to a standstill.

### *Components of growth*

**150 Simplified models.** If instead of considering the relationship between output and the factors of output at a given moment in time, we turn our attention to the evolution of this relationship in time, this leads us to analyse the factor components of growth.

An initial approach is to consider simplified models with only one production factor: labour or capital. Using the following notation:

$0$ = base year;
$t$ = terminal year;
$(0t)$ = period between base year and terminal year;
Y = production;
N = employment;
K = capital;
$y$ = production per member of working population;
$f$ = production per unit of capital;

and on the basis of our previous analyses, it can be stated that:

$$\begin{aligned} Y_0 &= N_0 Y_0 \\ r_{Y(0t)} &= r_{N(0t)} + r_{y(0t)}. \end{aligned} \tag{4}$$

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[1] P. Bairoch, *Diagnostic de l'Évolution Économique du Tiers Monde. 1900–66*, Paris, Gauthier-Villars, 1967.

The growth of production ($r_Y$) is derived from the growth of labour ($r_n$) and that of production per member of the working population ($r_y$) or partial productivity of labour. It should be repeated, however, that the approach using model (4) is acceptable only for relatively slight variations and therefore, in most cases, for short periods. If the rates are those given below, the relative magnitude of each factor in the over-all growth can be deduced from them:

$$r_y = r_N + r_y$$

Rates: 4 per cent = 1 per cent + 3 per cent

Components: 100 = 25 + 75.

The various possible situations, corresponding to various levels of development, have already been considered in subsection 104.

Similarly, as regards capital, it can be stated that:

$$Y_0 = K_0 f_0$$

$$r_{Y(0t)} = r_{K(0t)} + r_{f(0t)}. \qquad (5)$$

The growth of production ($r_Y$) derives from capital growth ($r_K$) and increased capital efficiency ($r_f$).

As before, the relative magnitude of these two factors can be determined.

**151 Aggregate model.** We have hitherto considered separately the relationship between the growth of production and the growth of employment or that of capital.

The production function $Y = f(L,K)$ may take several mathematical forms. The following expression, which is relatively simple and often used, is known as the Cobb-Douglas function:[1]

$$Y = L^{\alpha} K^{\beta} \qquad (1)$$

where $\alpha$ and $\beta$ are coefficients of elasticity: in the simplest formulation $\alpha + \beta$ is assured equal to 1. Formula (1) can then be written:

$$Y = L^{\alpha} K^{1-\alpha}. \qquad (2)$$

The mathematical analysis of this function cannot be presented here in all its rigour and complexity. We shall confine ourselves to a few aspects particularly relevant to our purposes.

Elasticity indicates the relative variation of production ($\Delta Y/Y$) divided by the relative variation of one of the factors ($\Delta L/L$ or $\Delta K/K$). The coefficients and $(1 - \alpha)$ are therefore respectively equal to:

$$\alpha = \frac{\frac{dY}{Y}}{\frac{dL}{L}} \qquad (1 - \alpha) = \frac{\frac{dY}{Y}}{\frac{dK}{K}}.$$

---

[1] From two United States economists who so formulated it in 1928.

These coefficients can also be written in the form:

$$\alpha = \frac{r_Y}{r_L} \qquad (1-\alpha) = \frac{r_Y}{r_K}$$

whence $r_Y = \alpha r_L$ and $r_Y = (1-\alpha)r_K$.
It can be proved [1] that the over-all growth of production ($r_Y$) is equal to the weighted growth of the production factors:

$$r_Y = \alpha r_L + (1-\alpha)r_K. \tag{3}$$

It is also proved that $\alpha$ and $\beta$ represent the proportion of national income imputable respectively to labour and to capital. If wages and salaries account for 60 per cent of national income, and the proportion imputable to capital 40 per cent, the over-all production function can be expressed as:

$$Y = L^{0.6}K^{0.4}.$$

If, as development proceeds, capital increases faster than employment, the capital per labour unit increases, as does the proportion of capital in the combined primary inputs. In other words, $\alpha$ diminishes and $\beta$ increases. This means that production functions are functions valid at a given moment in time (or for a given period). Production functions are dated functions. The corresponding equations will therefore be:

$$Y_0 = L^{\alpha_0}K^{(1-\alpha_0)}$$
$$Y_t = L^{\alpha_t}K^{(1-\alpha_t)}.$$

If $Y_t$ is greater than $Y_0$, the growth of production has been achieved through substitution of the function ($t$) for the function (0).

This brief analysis shows that there are at least two ways in which production can be increased: by the total production function tending to a certain limit (see Fig. 6) or as a result of modifying the combination of production factors (primary inputs), in passing from a function (0) to a function ($t$).

### *Progress and progressive society*

**152 Revelation of the third factor.** The Cobb-Douglas function has given rise to many applications in recent years to determine growth components following the work of Denison. Experience has shown that equation (3) does not hold good in practice, as there is in fact a residue (R).

Numerous examples could be given. Table 36 is taken from the work of E. F. Denison and J. P. Poullier.[2]

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[1] Let $Y = L^{\alpha}K^{(1-\alpha)}$ or $\log Y = \alpha \log L + (1-\alpha) \log K$.
Taking the logarithmic derivative we get, after simplification:

$$\frac{\Delta Y}{Y} = \alpha\frac{\Delta L}{L} + (1-\alpha)\frac{\Delta K}{L}$$

which can also be expressed as

$$r_y = \alpha r_L + (1-\alpha)r_K.$$

[2] Edward F. Denison and J.-P. Poullier, *Why Growth Rates Differ, Postwar Experience in Nine Western Countries*. Washington, D.C., The Brookings Institution, 1967.

TABLE 36. Mean annual rates for the period 1950–60

| | $r_Y$ | $r_L$ | $r_K$ | $r_R$ |
|---|---|---|---|---|
| United States | 3.3 | 1.1 | 0.8 | 1.4 |
| Great Britain | 2.3 | 0.6 | 0.5 | 1.2 |
| North-west Europe | 4.8 | 0.8 | 0.9 | 3.1 |

This table calls for many comments on growth and its components, but let us note that the residual factor, or third factor, plays a basic part in this growth (particularly on the continent of Europe). This third factor corresponds to the increase in factor productivity, which is a yardstick of technical progress. Growth results not only from an increase in the volume of the means of production, but also from the improved quality and efficiency of such means, better organization of production and, generally speaking, the achievement of various forms of progress.

These sophisticated and yet questionable methods of analysis are only applicable in certain circumstances. Here we shall concern ourselves with what they have to teach us about the growth process.'

**153 Forms of progress.** Although it is so familiar, the notion of progress is formidably complex when an attempt is made to state exactly what it is and gauge it. Several forms of progress can be distinguished:

*Technological progress* or progress of techniques: improvement of known instruments or processes and invention of new instruments and processes.

*Technical progress*—measured by increased factor productivity (at constant prices). This is the progress considered in subsection 152. Having taken no account of price variations, we have implicitly assumed prices to be constant. This progress occurs as a result of the 'substitution' of improved or new means and methods and through organizational changes.

Changes in respect of manpower and equipment introduce into the production processes progress which is 'incorporated' in ensuing generations, while changes in respect of organization take the form of alterations of size (economies of scale), of structure (different combination of production factors), of location (abandonment of marginal land with intensified production in the most productive areas), etc.

*Economic progress*—measured by the fall in average real prices, as a result of the fall in production costs through increased productivity (in terms of volume). If the economic system is conducive to progress, a fall in costs should bring about a lowering of the general price level and a consequent increase in average purchasing power. Since productivity increases vary greatly from one product or production sector to another, they may give rise to considerable price distortions.

*Social progress*—or the spread of technical and economic progress in the community at large. The question here is who benefits from the progress.[1]

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[1] Although at one stage we considered including in this book an account of the theory of the social distribution of progress, in the end we regretfully decided against doing so.

*Human progress*—which is indeed the most important of all, though its analysis is more a matter for the philosopher. Among questions he will be likely to ask himself are whether a society which sets out primarily to maximize *per capita* growth is a rational society and whether technical and economic progress always constitutes genuine progress.

**154 Progress and development: the process of creative destruction.** According to J. Schumpeter,[1] talking about growth means describing a process of creative destruction. As we have seen, progress is the most fundamental component of growth. But technical progress is destructive: it does away with obsolete instruments of production, outdated organizational forms, ill-suited training and so forth. Progress is a constant threat to instruments, institutions and people. The destructive aspects of progress may give rise to conservative reactions. Technical progress and institutional changes are in most cases inevitably linked. The development process stems from the interplay of material and institutional forces.

But the destructive process engendered by progress is ultimately creative: the increased productivity resulting from the 'substitution' of improved or new techniques and organizational forms brings about an increase in factor productivity, which is evidently the fundamental component of growth.

**155 The modalities of progress.** The furtherance of progress comprises two major phases: creation and propagation. The pace of creation and the speed of propagation depend, in particular, on the general standard of education. Each of these phases itself includes several stages, which are summarized below:

- Education
  - ↗ Creation
    - Discovery
    - Invention
    - Development
  - ↘ Propagation
    - Information
    - Innovation
    - Dissemination

To illustrate the process of progress, let us take the example of the steam engine, which played a basic part in industrializing Western society in the nineteenth century.

Denis Papin, a French physicist born in Blois, discovered the 'elastic force of steam' early in the eighteenth century, but it was James Watt (1736–1819) who 'invented' the steam engine. Development of the machine raised a great many problems concerning construction materials, the shape of the engine and so forth. Once the machine has been invented and sufficiently developed for dissemination, the creative period is over and the period of propagation begins. The prospective users of the machine have first to be informed. A businessman must then decide to use it. This businessman who puts a laboratory discovery into practice is an innovator, a 'pioneer' who accepts risks. If he succeeds he will be followed by the multitude of less-daring spirits, so that there will be dissemination through imitation.

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[1] J. Schumpeter, *Capitalism, Socialism and Democracy*, 3rd ed., London, Harper and Row, 1950.

Agricultural progress follows similar stages: the creation or invention of a new variety depends on genetic discoveries; before being generally distributed a variety must be tested so that its behaviour can be observed, cropping techniques developed, etc.; agricultural extension services then publicize it by such means as trial fields, a few go-ahead farmers adopt it and, if it proves worth-while, a great many people imitate the pioneers.

**156 Progressive society.** The progressive society is that in which creation is organized by means of research and development institutes together with propagation through a system of training and information.

The progressive society adapts institutions with a view to facilitating and humanizing change and reducing the social cost of progress. In such a society progress has a meaning for everybody as it is spread throughout the community and benefits all social categories.

The participation of people is organized with a view to determining and implementing progress. Development is an objective accepted by the citizens.

Such a society is, however, only an ideal outline and to some extent Utopian. The struggle for progress and development is long and arduous. It does not spring solely from technical creation and propagation but also depends on the steps taken by political and community leaders in order to gain acceptance of the social change which accompanies technological change—and, in some cases, constitutes a prerequisite for the advent of a progressive society.

**157 Formalization of progressive growth.** Examination of traditional growth has shown us that, assuming a usable capital that is relatively small and constant in time and a constant level of technology, production depends basically on the quantity of labour. This situation is characteristic of traditional societies—whether patriarchal, slave or feudal—which are all economies based just about exclusively on labour. When this is so, production tends towards a maximum.

What fundamentally marks out progressive society from the traditional economy is that it is constantly capable of postponing the day when the law of diminishing returns begins to apply, by introducing new means and methods.

Growth can thus be analysed as a process involving the 'substitution' of new functions, in such a way that productivity of labour is continually increasing. This gives the lie to the pessimistic forecasts of Malthus who overlooked technical progress in his social development equation. The law of non-proportional returns holds good only in relation to a given production function, and so for a given economic structure. In a progressive society the law of non-proportional returns has no historical significance.

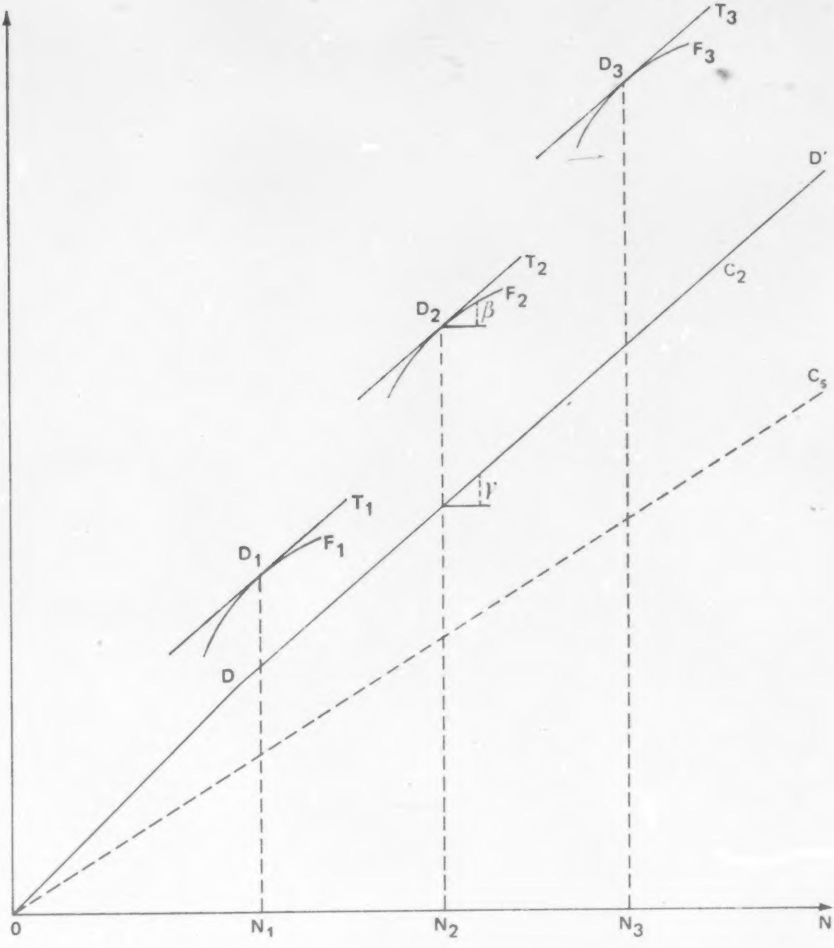
Likewise since there is an optimum population density for a given technology, the substitution of functions in a progressive economy means that this optimum level is continually shifting.

Figure 17 is a diagrammatical representation of progressive agricultural growth. It should be compared with Figure 6, which concerned traditional agricultural growth. The successive functions are characterized by a shift of the maximum (the maximum production potential of the society increases) and by increasing productivity of labour. This increase is due to the fact that there is more capital available per labour unit (and therefore capital accumulation) and also to more skilled and better-organized labour.

FIG. 17. Progressive agricultural economy $Y = N\Phi\left(\frac{S}{N}, \frac{K}{N}\right)$. $F_1$, $F_2$, and $F_3$ are production functions such that:

$$Y_1 = F_1(N_1K_1)\ldots Y_3 = F_3(N_3K_3) \Rightarrow \frac{K_3}{N_3}\Big\rangle\frac{K_2}{N_2}\Big\rangle\frac{K_1}{N_1}.$$

$C_r$ represents the actual consumption of food products. This consumption grows rapidly to begin with (high coefficient of elasticity), then more slowly. $\beta$ and $\gamma$ are marginal production and marginal consumption respectively. In $N_1$, $N_2$ and $N_3$ the population is optimum. Tangents $T_1$, $T_2$ and $T_3$ are parallel to DD′ at points $D_1$, $D_2$ and $D_3$ respectively ($\gamma = \beta$).



This outline does not in itself depict the various modalities of growth, which may be the outcome of:

1. The increased extent to which available production capacity is used; by reducing underemployment, the economy tends towards full employment of these resources (labour and capital) and increases its production.
2. The growth of employment associated with population growth and investment.
3. The growth of capital associated with the process of saving.
4. The increase in over-all productivity in a full-employment economy (where full employment is put to efficient use).
5. Optimization of the use of resources through the international division of labour and geographical transfers, in order to maximize the over-all economic growth of a particular geographical region or the world as a whole.

## Technological change in agriculture: the Green Revolution

**158 Recent changes in agricultural technology.** Considerable progress has been made in recent years in the development and application of a new agricultural technology [4, p. 139–43].

Plant selection and the creation of new high-yield varieties underlie what has come to be called the 'Green Revolution'. It can be described as 'the large-scale adoption of an agricultural technology adapted for use in tropical regions.'[1] The research undertaken by the international centre concerned with improvement of corn and wheat (CIMMYT) in Mexico and at the International Rice Research Institute in the Philippines finally led to the development of new varieties of wheat, rice and corn. These varieties react much more readily to fertilizers and to irrigation than the traditional varieties and produce high yields. They offer the further advantage of having a relatively short production cycle and, in the case of rice, of not depending on a particular season. Therefore two or sometimes three harvests a year can be obtained, provided cropping conditions permit.

Considerable progress has also been made in fertilizer technology with the use of natural gas for synthesis of ammonia (which cuts manufacturing costs), the increase of fertilizer concentration (which means lower transport costs), the production of liquid fertilizer and compound fertilizers (which makes them easier to use), the development of slow-acting fertilizers (which reduces the number of applications needed), and so on.

A great deal of progress has also been made in pest control. Chemicals have gradually taken over from traditional means, particularly cropping (rotation) and mechanical methods. The present trend is towards the development of 'biological and integrated control', which implies co-ordinated use of the various control methods and tends to reduce the harmful effects of the treatments.

Progress in animal production mainly concerns improvement of livestock through artificial insemination, improved feeding as a result of progress in fodder production and the manufacture of cattle feed, greater hygiene due to new techniques of producing vaccines and the organization of intensive animal production systems (for eggs, poultry and pigs).

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[1] Montague Yudelman, 'The Green Revolution', *OECD Observer*, No. 52, June 1971, p. 15–30.

As regards the infrastructure of crop and animal production, particular progress has been made in water control. However,

> . . . in water use and irrigation, a number of spectacular developments in which high hopes were originally placed, including the artificial inducement of rainfall, the control of evaporation from reservoirs and the desalinization of sea water, have proved somewhat disappointing. While desalinization has become feasible for urban and industrial use, it is still far too costly for agriculture [4, p. 140].

In forestry the selection of fast-growing species enables production to be intensified, and the industrial technology of forest products has greatly developed.

Progress has also been made in food preservation (deep-freezing), food processing and the development of new products (with, for instance, protein enrichment). Agricultural technology stands to gain a considerable spin-off from the spectacular progress in atomic science and space technology, in such forms as cheaper desalinization of sea water, the use of remote sensing for surveying resources, production and infested areas, etc.

Computers are already frequently used in agriculture to draw up various working and development schedules.

The progress of science in recent years has had numerous applications in agriculture and transfers of technology have been made possible. A further point is that agricultural research, which used to be more concerned with export crops, is increasingly turning to subsistence crops. Experimentation networks are being established to test new techniques. Substantial progress is still possible, however, in the matter of suiting these techniques to the specific conditions of the LDCs. A case in point is mechanization, where the usual aim is to reduce the labour/output ratio, which, though not something to be disregarded, is not always the most important consideration for the LDCs. It is nevertheless true that the LDCs can benefit from the spectacular progress of science and technology, provided socio-economic conditions permit the introduction of the new techniques.

**159 The Green Revolution.** The technological change resulting from the introduction of high-yield varieties and the associated increase in current purchases by agriculture (fertilizers, pesticides, water, etc.) have been so momentous in their effects as to earn the name of the 'Green Revolution'. In the last five years, some 5 million individuals are thought to have adopted the new technology. In some parts of India it has increased production to the extent that 30 million people can now be provided with 60 grammes of protein a day [1]. The change is particularly marked in Mexico and the Philippines, which were the first countries to benefit from this revolution. In Mexico the average wheat yields rose from 0.94 tons per hectare in 1949 to 2.64 tons in 1968. 'In the Philippines a study of 204 farms indicated that rice yields per hectare rose from 2.3 tons to 4.5 tons in one season when farmers used the new varieties and other inputs.' [2]

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[1] Yudelman, op. cit., p. 30.
[2] Yudelman, op. cit., p. 16.

'Between 1965–66 and 1969–70, the estimated area under high-yielding varieties of wheat and rice increased from 41 *thousand* acres to 43.9 *million* . . . 24.6 million acres were planted to high yielding varieties of wheat and 19.2 million to rice.'[1] Some 60 per cent of the land under new varieties was in India, 20 per cent in Pakistan and practically all the rest in the Philippines, Turkey and Tunisia.

With the increase in areas under cultivation, fertilizer consumption has risen considerably. In Asia the growth rate was around 20 per cent between 1966 and 1968 but it tailed off in 1968–69.[2]

This technological revolution is clearly widespread but it does pose a number of socio-economic problems, and these should be examined.

1. The new technology has had no marked effect in Latin America outside Mexico or in Africa, except in North Africa. In Asia, where it has had its greatest success, the new crops account for only 10 per cent of all cultivated land and 20 per cent of the wheat acreage. The spread of the Green Revolution is therefore still limited. It should not be forgotten, however, that it began about five years ago and that progress has consequently been relatively rapid.
2. The new varieties were adopted mainly in the most favourable areas where farmers enjoyed controllable water supplies, could buy fertilizers and pesticides and had educational and economic institutions facilitating the spread of techniques and the marketing of produce. For example, in India and Pakistan wheat growing has been developed in the irrigated areas. Geographical concentration is less marked in rice-growing but is none the less a factor to be reckoned with. Initially, therefore, the new technology tends to increase regional disparities. Grain-growing areas of low potential may even find themselves up against stiffer competition, which could aggravate their situation if certain measures were not taken.
3. To encourage farmers to adopt the new varieties, prices have often been set relatively high. Farmers have responded to the price inducements, but the high prices have two basic consequences. First, they affect the level of consumption, pushing up the price of food and so generating pressure for higher wages and salaries. Second, as grains become more profitable they tend to replace other crops: these may be export crops, in which case there is a drop in foreign exchange earnings; or they may be fodder crops, which damps progress in animal husbandry and the production of animal proteins. High grain prices may curb the development of sheep farming and pig breeding, which is serious because they afford a rapid means of increasing animal production. It is generally agreed that the price of grain should be reduced with the widespread introduction of high-yield varieties, but some way must be found of not discouraging farmers.
4. The increase in production has caught traditional commerce off its balance, and it has sometimes proved unequal to the new situation. 'Even in Mexico, which has experienced more than a decade of the widespread diffusion of the new technology, the weakness in the rural marketing infrastructure is still considered to be one of the major problems in the development of the rural sector'.[3]

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[1] Yudelman, op. cit., p. 16.
[2] Yudelman, op. cit., p. 28.
[3] Yudelman, op. cit., p. 18.

5. The Green Revolution is likely to have some effect on international trading in grain. A drop in international demand has occurred in the countries benefiting from the Green Revolution. At the same time, the wheat stocks of the major world exporters have increased and prices have fallen sharply.
6. With the observed growth of rural population, there is increasing concern to absorb underemployment. The introduction of a new technology may therefore be considered from the standpoint of its effects on employment. According to the OECD Development Centre, the introduction of new varieties brings about a per hectare increase in employment which may be as much as 30 per cent. However, this factor is limited in its benefits for at least two reasons. First, it is mainly seasonal labour, so that there may be very considerable seasonal underemployment. The second point is that for various reasons those farmers who can mechanize operations tend to do so. The mechanization capacity of the best-situated farms could therefore reduce rather than increase employment.

**160 The Green Revolution and agrarian structures.** In subsection 159 we have drawn attention to the many commercial implications of the new technology. It is also likely to affect agrarian structures in a variety of ways. Mention has already been made of its effects on regional disparities, the relative geographical concentration of agricultural wealth, and its direct and indirect effects on employment and accordingly on income distribution. But a basic problem is that of the relationship between the agricultural revolution and agrarian structure, particularly in regard to the size of farms.

A feature of the new techniques is that they are divisible, so that they should in theory be independent of agrarian structures and available to all farms, of whatever type or size. Seeds, fertilizers, pesticides and water are all divisible factors. In fact, access to the new techniques depends on the extent to which farmers have access to information to inputs and to credit, and here serious disparities may arise. The usual tendency for large holdings to assimilate progress more easily and have readier access to inputs may be reinforced by the preferential treatment they receive from the authorities. This tendency, which is justified by concern for short-term economic efficiency, may increase disparities between farms according to their size and cause social tensions in so far as the Green Revolution benefits the most favoured social categories. The new technological model could also in some cases add to rather than alleviate the dualistic character of the economy. Against a backcloth of wholly or largely subsistence agriculture with low labour productivity, we see developing or expanding a high productivity form of agriculture, occupying a privileged position thanks to the extent to which it has access to information sources and inputs.

The survey made by the Special Committee on Agrarian Reform 'confirms the already widespread impression that increased productivity alone has not improved the position of the great mass of rural workers, but, on the contrary, frequently makes it worse'.[1] This aggravation takes various forms. In order to take advantage of the new sources of profit offered by the Green Revolution, landowners sometimes try to evict those previously cultivating the land as tenants or smallholders, either to work it directly or to let it more profitably to more enterprising farmers. Increased incomes and the relatively low cost of imported machinery, together with the tendency to cut down on labour for reasons which are sometimes of a socio-political character, may lead, amongst other things, to greater underemployment.

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[1] FAO, *Report of the Special Committee on Agrarian Reform*, 40 p. (Mimeo.) (FAO document 71/22 dated 15 September 1971.)

Any assessment of the role of the Green Revolution in the development process should ultimately take account of the growth, transfer and destination of the agricultural surplus.

Although the Green Revolution affords a hope whose effects should be neither discounted nor exaggerated, it only really becomes instrumental in over-all development if the surplus obtained goes to foster such development. The question, therefore, is who really benefit from the surplus and what use they make of it. If the Green Revolution maintains or even accentuates social inequality, it is not likely to enlist massive support for development. What is more, this revolution is for the time being more or less confined to the major peasant farming areas of Asia. It has barely started in Africa and Latin America. Prevailing conditions in the world are not those of the Green Revolution, which heralds in progressive agriculture, but are more those of traditional agriculture, with its semi-feudal or peasant structure, marked as they are by numerous forms of domination of the peasant world.

In these circumstances, the switch to progressive agriculture and the enlistment of massive support for development may require deep-seated socio-economic changes, which may be regarded as prerequisites for development.

To sum up, the Green Revolution, which is of a purely technical nature, 'does not touch the fundamental problems of equitable income distribution, social justice and political power which are so closely bound up with agrarian reform . . . In other words, the Green Revolution is not a substitute for agrarian reform but rather its necessary and natural complement'. [1]

## Socio-economic changes

**161 Social transformations.** Many social transformations accompany techonological change or constitute prior conditions for such change.

This is true of land reforms where agriculture is organized along traditional socio-economic lines unsuited for many reasons to a process of agricultural development. In such cases the aims, methods and urgency of the reforms should be considered in terms of the aims and pace of development.

One aim of land reforms is to establish new structures of agricultural production or to adapt the existing structures to their economic function viewed in the context of development. The structures are far more dependent on political decisions than on purely economic considerations. This explains for example the widening gulf between the large collective farms in the socialist countries and the individual smallholdings which predominate in many countries of the market-economy area.

If dissemination of the new technological model and of the social changes accompanying or preceding it is to be successful, steps must be taken at the same time to raise the level of training and information of the rural population. To this end, experimentation and extension services must be established and there must be more intense basic training designed to instil an 'experimental attitude' and understanding of the development process.

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[1] ibid.

Increased production is going to call for the organization of markets and the distribution network for agricultural and food products will have to be adapted to handle much greater flows of goods. Agrarian changes and increased production also imply the establishment or extension of official credit facilities, such as will free the peasant from ruthless money-lenders and facilitate orderly agricultural and general investment.

Since the State necessarily plays a decisive part in the agricultural development of the LDCs, the organization of government services should come in for special attention. So too should planning institutions, with their basic twofold role of co-ordinating government activities and organizing the participation of the public at large in the preparation and execution of the plan.

### *Land reforms*

**162 The aims of land reforms.** These aims depend on the socio-economic system and on the particular courses set for development. However, there seem to be three principal aims:

1. Social justice: land reforms are presented as a means of reducing inequalities resulting from the distribution of land and employment. These reforms should help to reduce disparities in income among the various social categories within agriculture—such as owners, wage-earners and peasants—and between country people and town-dwellers. The latter inequalities may cause a 'pathological exodus' from the countryside due to the desire of the peasants to put an end to their state of virtual bondage. The underlying principle of the reform is that the socio-economic system makes it possible to exploit peasants and agricultural workers and that it should be replaced by a system enabling those who work the land to benefit from the product of their activity.
2. Simultaneous modification of the production relations and political conditions prevailing within particular countries: land reforms tend to do away with lingering feudal or semi-feudal relations, which offend the dignity of those living on the land and, what is more, curb or block growth. Land reforms reduce the political power of the landed oligarchies and consequently modify the pattern of political power. In countries adopting a socialist course the take-over of political power may be accompanied by a redistribution of the land to those working it. This wins over the rural population and means that the foundations can be laid for new socio-political conditions. This initial phase is followed by a second tending to develop forms of collective organization of production.
3. In the context of over-all socio-economic development, land reform is looked on, in some countries, as a prerequisite for development.[1] Its role is to bring about the conditions that will make it possible for the general public to participate in the development process.

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[1] FAO, *Report of the Special Committee on Agrarian Reform*, op. cit.

**163 Land reform and agricultural surplus.** Generally speaking, statistics show that labour productivity is higher on large than on small farms but that, on the other hand, productivity per hectare is higher on small farms.

The basic reason for high productivity per worker on large farms is that the area per labour unit is greater. Moreover, this higher productivity is revealed by internal accounting systems, which only record imputable labour. Such assessments are obviously devoid of any over-all significance in so far as the large estate is able to slough off underemployment onto the outlying subsistence holdings. This situation is characteristic of Latin American structures, based on the latifundio-minifundio pattern.

In the LDCs, where population pressure is high, the available area per worker low and unemployment and underemployment persistent or even on the increase, it is all-important to measure land productivity in order to assess farming systems. The large estates generally have a lower productivity per hectare. This is due to the practice of leaving some land fallow or uncultivated, and to the fact that because of the sheer size of their properties large landowners manage to get quite substantial incomes without having recourse to intensive farming methods.

From the standpoint of development strategy, our previous analyses lead us to consider the effects of land reform on the formation and transfer of the surplus. The economic impact of land reform depends on the share of agricultural income in total national income, the effects of the reform on productivity and the distribution of the monetary return on the surplus and, finally, the direct and indirect effects on the other sectors of the economy.

The economic effectiveness of the reform depends on the growth of the surplus in relation to the growth of productivity and of food consumption by the agricultural population. Generally speaking, when the agricultural population gains access to productive resources which in the past they were denied or virtually denied, an increase in consumption results. Various measures should therefore accompany the reforms to ensure faster growth of labour productivity.

The direct and indirect effects on the economy as a whole depend on the consequences of the redistribution on consumption, saving and tax revenue.

The redistribution tends to reduce the purchasing power of the privileged classes, often the consumers of imported luxury goods, and increase that of the multitude of poor peasants whose need is for basic necessities such as textiles, footwear, accommodation and furniture. The result may therefore be to stimulate certain light industries, as happened in Europe for such items as textiles and footwear.

There are those who sometimes find some economic justification for unequal distribution, the economic function of the rich classes being to save. In actual fact, as was illustrated recently, the savings of the rich classes may be quite unrewarding for development (transfer of savings abroad, prestige expenditure, etc.).

However, the formation and growth of savings on new socio-economic bases can only come about if productivity increases beyond the subsistence level and permits a transfer of surplus, particularly by means of a suitable taxation system. It is therefore obvious that no land reform unaccompanied by increased agricultural productivity, even if it met social objectives, would pave the way for development.

**164 The modalities of reform.** Land reform is a far-reaching political act. It can, therefore, only be carried out by a political decision. Since it alters the relative power of social groups, it in fact entails a redistribution of power. The way in which the reform is carried out depends therefore on the aims in view and the particular course set for development. A few basic principles can nevertheless be stated.

The first is that, historically, land reform has been mainly concerned with the division of large estates. In the United States President Jefferson made of the family farm, as the property of the farmer, the nucleus of American democracy. At the time of the War of Independence the lands of the 'loyalists' who remained true to the British Crown were divided up. This was also how land reform was viewed in Western Europe following the French Revolution, in Eastern Europe after the First World War, in the Mexican Revolution and more recently, since the Second World War, in Japan, Korea and Taiwan. In the present circumstances of the LDCs, such factors as the need to give greater attention to increasing the productivity of agricultural labour, the specific conditions resulting from the independence of former colonial States and the spread of new ideologies have led to novel approaches being adopted involving, for instance, the nationalization of colonial estates, public ownership or the formation of estates run on a self-management basis.

Second, the concept of land reform has been gradually extended. It is no longer concerned solely with the socio-economic transformation of large estates but more generally with the adaptation of agrarian structures to the agricultural and general development process. It may therefore involve the radical transformation or adaptation of the main forms of socio-economic organization of agriculture (customary, feudal, peasant or capitalistic), and may comprise measures relating to the modification of customary law, collective obligations, modes of working the land, land rents and farm lease regulations, to the establishment of a register of land ownership and entitlements, etc.

Land reform constitutes an integral component of rural development policy in regard to such matters as determination of land reserves, water resources development and reafforestation.

Third, land reform is increasingly associated with the whole gamut of other institutional reforms. Experience shows that for it to be an economic success it must be dovetailed in with the establishment or adaptation of training and information services, institutional credit facilities, distribution systems and agricultural organizations.

Finally, land reforms are necessarily tailored to a specific context, so that their scope and methods are not the same in areas with prevalent customary, feudal, peasant or capitalistic systems. In areas with feudal methods of farming, what is needed is a new distribution of land, intensified production, higher over-all productivity and better living standards for the peasants. The latter become, as the case may be, family farmers, wage-earners with a legal status or members of agricultural co-operatives.

Where the pattern of agriculture is capitalistic or semi-capitalistic and comprises suitably organized units concerned mainly with exporting, land division would probably not prove effective and the establishment of production co-operatives, together with a partial reconversion to food crops, is no doubt preferable.

When it comes to strengthening or actually instituting peasant agriculture, the purpose of reform is to protect peasant farming, ensure continuity of production through long leases, encourage land improvements, lay down reasonable rents, develop co-operative facilities to support smallholdings, etc.

**165 Urgency of land reforms.** The United Nations and its Specialized Agencies have come out clearly in favour of land reforms. The Special Committee on Agrarian Reform puts it like this: . . . many factors underline the urgency of undertaking agrarian reform or of swiftly continuing its implementation, as the case may be. The achievements in this field that can be pointed to for the 1960s appear to be inferior to those of the previous two decades'. [1]

The basic reason for this attitude is that the development targets of the Third World have not been achieved and that the situation has even deteriorated in some countries. The gap between the DCs and the LDCs has widened in terms of production, income and *per capita* consumption, internal differences of income among socio-occupational categories have become more marked, and chronic underemployment and unemployment are increasing as the population continues to grow. This situation cannot be entirely attributed to the survival of outmoded social and economic structures, but such vestiges are no doubt a major drag on growth in some parts of the world. [2] The survival of semi-feudal patterns, the extent to which peasants are utterly dominated by landowners, money-lenders and traders, the over-concentration of the capitalistic sector on exporting and the existence of vast numbers of landless peasants—all these, as well as other factors, are not conducive to the acceptance of technical progress, increased agricultural productivity or the accumulation of savings to serve agricultural and general development.

Furthermore, as we have already shown, the Green Revolution does not provide any solution to the problems of faulty agrarian structures; indeed it tends to heighten inequalities and social tension.

**166 The progress of land reform.** The *Report of the Special Committee on Agrarian Reform*, to which frequent reference has already been made above, includes an account of the present state of land reform throughout the world. We shall confine ourselves to the salient features of this account: those denoting basic trends.

The Latin American countries' support for land reform was demonstrated at the Punta del Este Conference held in the early 1960s when they decided to set up a Comité Inter-americano de Desarrollo Agrícola (CIDA), which has since carried out major studies (referred to in Part I above) on agrarian structures. The most noteworthy results seem to have been obtained in Mexico, Bolivia, Cuba, Colombia, Chile and Peru.

The reforms in Mexico and Bolivia are the most long-standing. They began in Mexico in the second decade of this century and in Bolivia in the 1950s. In Mexico they led to the development of private property and also to the regeneration of collectively owned property, in the form of *ejidos*. In Bolivia the *colonato* was abolished and land distributed to the peasants.

In Cuba land reform is bound up with a radical change in the political structure. It has led to the establishment of 'people's holdings' (State farms), linked with sugar co-operatives, which coexist with 'small producers' owning a maximum of 67 hectares. The small producers have gathered themselves together into a 'national association', in which the State has its say in various ways.

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1. FAO, *Report of the Special Committee on Agrarian Reform*, op. cit., p. 8.
2. ibid.

In Chile, the land reform has gathered momentum but 'there are opposing currents in regard to the definitive structure of tenure systems and of production units'.[1]

In Peru the reform will soon be complete with the disappearance of the latifundia and the establishment of producer co-operatives (e.g. the large sugarcane plantations in the coastal area), State land and small and medium-sized holdings.

The Middle East is characterized by a wide variety of political systems. Land reforms have been applied in a number of countries, and this has sometimes been facilitated by the financial resources deriving from oil exports (as in the case of Iran). This semi-arid zone has specific characteristics linked to geographic conditions, such as the prominence of nomadism and the part played by irrigated crops. In Egypt, Iran (where a feudal system reigned), the Sudan, Iraq and the Syrian Arab, the reforms have generally led to the establishment or development of individual farms associated with rural development co-operatives (Egypt, Iran, Republic) and more rarely to forms of collective farming.

In Africa, tribal or community ownership is still the general rule. The increasingly necessary switch from nomadic to settled farming calls for changes in customary law. 'Some African countries have taken significant steps to create a system of individual private property similar to that of Western European countries'[2] (Uganda, Kenya, Malawi, Niger, Ethiopia).

In Asia, the land reforms began after the Second World War. Very different situations exist but, on the whole, what characterizes the region is the predominance of small farms, an unsatisfactory system of tenant farming and share-cropping, a relative concentration of ownership in certain regions and the dominant position of the tradesman and the money-lender.

The tendency here is towards improving land-tenure systems, consolidating peasant ownership and developing co-operative activity.

**167 Land reforms and development.** Many countries have adopted the principle of land reforms and some have managed to establish a structure more conducive to socio-economic development by such means as enlisting the support of the rural population at large, stepping up production and making technical progress more widely known.

The reforms are sometimes hampered by practical difficulties arising, for example, from the distinction between 'well cultivated' and 'badly cultivated' land, the volume of resources required, etc.

The division of land into 'well cultivated' and 'badly cultivated' categories generally gives rise to a complex procedure which slows down the application of the reform. The allocation of too great a proportion of resources to compensation, to the detriment of other operations of basic importance from the standpoint of development, is liable to have adverse effects on growth. Furthermore, if beneficiaries under the reform have to repay a proportion of the value of the land, these repayments may jeopardize the modernization of agriculture and higher living standards. Finally, from the point of view of development, consideration must be given to the use the beneficiaries may make of the compensation they receive. The granting of compensation bonds, which may be used to buy shares in industries or other State undertakings, is one way of making compensation serve development.

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[1] FAO, *Report of the Special Committee on Agrarian Reform*, op. cit., p. 15.

[2] FAO, *Report of the Special Committee on Agrarian Reform*, op. cit., p. 21.

Lastly, it should be remembered that land reform cannot be effective unless it is accompanied by the establishment of satisfactory production units, the provision of information, agricultural supply and credit facilities, the reform of distribution networks, etc.

*Adapting the structure of production units*

**168 Recent trends.** The traditional forms of socio-economic organization of agriculture were to a greater or lesser degree modified by Western penetration. Since the Second World War the attainment of independence, land reforms, the development of training and information services, the Green Revolution and other factors have brought about a further change in production structures.

The structure of agricultural production units does depend on agronomic considerations, but it depends much more fundamentally on the general socio-economic structure and the concentration of ownership in the socio-economic system.

The forms of socio-economic organization of agriculture depend on the particular course set for development—be this socialism, capitalism or what you will.

The assumption of power by socialist forces, for instance, obviously brings about a radical transformation of production structures. This was the case for example in Eastern Europe, Cuba and China.

In the LDCs, the attainment of independence has often been followed by nationalization of 'colonial' land and the establishment of State farms—under self-management or otherwise—and of co-operatives. The land reforms which have been carried out in many countries of Latin America, Africa and Asia tend to build up craft-based or small-scale farming and strengthen the rights of owner-farmers.

In this work it is not possible to deal fully with the relationship between production structures and the different modalities and stages of development; mention will be made of just a few basic trends.

**169 Structures of production units in the socialist countries.** The agricultural sector of socialist economies generally consists of three subsectors: the peasant sector, a survival of pre-socialist forms, the co-operative sector and the State sector.

The relative size of these three subsectors differs according to the historical context, the stage reached in the construction of socialism and so forth. The trend is towards absorption of the peasant sector by the co-operative sector, the pace and mode of absorption often varying according to the political situation at the time, but also according to the rate of transformation of the economy as a whole, which influences the rate of transformation of agriculture. The aim is generally to form mechanized production units of several thousands of hectares based on the pooling of means of production and collective labour, and more or less autonomous depending on the form of socialism adopted.

The rate of transformation of the socialist economy to attain these aims will depend: (a) on the role of agriculture in the development process and the expected effects of social changes on the way in which agriculture can carry out its assignment; (b) on the growth of industrial demand for the transfer of agricultural workers, and on the consequences of such transfers on the area available per worker and the productivity of agricultural labour; (c) on the growth rate

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of industrial production, particularly as regards the manufacture of agricultural production implements permitting substitution of technical capital for agricultural labour; (d) on the rate at which training and information facilities are extended to agricultural workers, administrators and key technical personnel; and (e) on current political circumstances.

The year 1929 saw the vigorous start of collectivization in Soviet agriculture through the establishment of State farms and collective farms (or villages). On collective farms activities are essentially collective, and each member takes part in them as one of a 'labour team'. However, each family has an allotment, generally of less than a hectare, which it is free to cultivate as it likes. This 'private sector' plays an important part in animal production.

Between 1930 and 1958 collective farms used the services of the State mechanization stations, which furnished the production units with the mechanical equipment they needed on a collective basis.

The collective farms of the U.S.S.R. have undergone several successive reforms and adaptations making for greater concentration and, recently, more autonomy.

In 1965 or thereabouts the total number of collective farms was 38,000, their average area 3,000 hectares (including 250 hectares of allotments) and the number of families per farm about 300. The average area of the State farm was much greater at around 9,000 hectares (including less than 100 hectares of allotments).

In the other countries of Eastern Europe, land reforms carried out in recent years as a part of socialist development have led to individual holdings being done away with or considerably reduced in importance while large-scale undertakings have been developed. This applies to Bulgaria, Romania, Hungary and Czechoslovakia. In Poland and Yugoslavia there are more individual holdings, but various forms of collective grouping have been organized. In Yugoslavia, novel forms of collective undertaking known as *combinats* are developing, embracing both agriculture and the agricultural and food industries. The Yugoslav collective undertakings are 'self-managed' in that they are based on relatively decentralized socialist management entrusted to elected workers from the constituent groups. This system of self-management has been applied in other countries, particularly in Algeria where the management of farms formerly belonging to European settlers has been turned over to the workers.

In China, as from 1958, peasants were gathered together into 'people's communes', with as many as 20,000 inhabitants and often more. Collectivization was extended not only to the means of production and the organization of labour but also to consumption (with common refectories). Industrial workshops set up within the communes meant that a variety of implements could be manufactured on the spot. The system seems to have evolved, becoming on the whole relatively more liberal, with family allotments, work teams enjoying a certain amount of independence, family meals and so on. These forms of production are likely to go on changing.

**170 Peasant farming.** Peasant (or family) farming as a form of socio-economic organization of Western agriculture formed the basis of the process of industrialization and economic development, though some countries, like England, turned towards more semi-capitalistic forms.

In Europe, peasant farming came into being through the transformation of semi-feudal agriculture during the period 1750–1850, as the result of a twofold (technical and social) revolution. This type of agriculture proved capable of absorbing certain forms of technical, biological, chemical and even mechanical progress. The extension of co-operative action has made it easier to bring family farming into line with the development process.

In the mid-twentieth century the family holding was still the most widespread socio-economic form of farming in Europe. In the six countries of the European Economic Community, around 1955–60, 80 per cent of agricultural workers were family farmers and the area directly worked represented 60 per cent of the total land farmed. However, with Western agriculture reaching the industrialization stage, the family holding is finding it increasingly difficult to adapt itself to the new technology. This explains the attention given to 'structures' in Western Europe and the quest for new forms of organization known for instance as 'group agriculture'.

Furthermore, the increased production of cattle feed and the greater technical control attained in certain branches of animal husbandry (e.g. sheep and pigs) lead to the industrialization of stock farming, production on a larger scale, and the establishment of 'integrated food production complexes'.

It is probable that the change under way will continue and that Western agriculture, after its transition from the semi-feudal stage to the stage of peasant farming (or 'craft-based agriculture'), will take a fresh step forward, turning, on the basis of the industrialization process, to 'neo-craft', and co-operative or semi-capitalistic forms.

With the aims laid down for their land reforms, some LDCs seem to be going in for the development of a craft or 'semi-craft' form of agriculture. Historical and geographical contexts are obviously very different, however, and it would be a serious mistake to think in terms of a transfer of the Western model.

In the LDCs the establishment of progressive craft-based agriculture implies the training and information of the peasants, their access to the means of production, the reorganization of distribution and credit systems, the protection of peasant farming patterns and so on. The prime requisite for progressive farming is undoubtedly to free the peasant from the many forms of domination to which he is subject.

In the context of the LDCs there is nevertheless a considerable risk of the emergency of a privileged category of farmers using cheap and underemployed labour. Peasant agriculture would then tend to move in the direction of semi-capitalistic forms of land tenure, with all the social tensions to which they give rise, as already mentioned with regard to the Green Revolution.

What is more, in order to achieve a certain degree of efficiency it seems that peasant forms of agriculture will themselves have to be backed by the public authorities and by agricultural organizations, which usually assume semi-co-operative forms.

**171 Agricultural co-operatives.** The 'co-operative movement' took shape and extended in Europe in the nineteenth century, to some extent as a reaction of the craft-based economy to the development of capitalism. In 1844 twenty-eight textile workers founded in the small English town of Rochdale the first consumer co-operative, known as the Equitable Pioneers of Rochdale. They laid down the principles which would form the basis of the Charter of the Co-operative Movement. The four basic principles are those of free-adherence, the rule 'one man one vote', the sharing of surpluses in proportion to transactions with the co-operative, and the fact that there is no interest on capital.

Most LDCs which opt for craft-based (peasant) or semi-capitalistic farming as a template for agricultural development endeavour at the same time to encourage co-operative activities.

However, since the historical context is different from that of Western development, the co-operatives established are often only distantly related to the Co-operative Charter and would be better termed semi-co-operatives. Certain advantages are sometimes made conditional on membership of co-operatives; and the authorities often have a hand in their establishment and operation by subsidizing them, appointing directors, laying down administrative regulations, and so forth. Such action, which is justified by the level of training and information of the peasants, the requirements of development, the mobilization of financial resources and so on, may give rise to various abuses and short-comings. If a transitional period proves necessary, it is no doubt usually advisable to regularize the situation as soon as possible.

Co-operatives may take several forms, being concerned with production, processing, marketing, etc.

Production co-operatives are, properly speaking, a collective form of production similar in some respects to the Soviet collective farm, the Moshav Shitoufi in Israel, the people's holdings in Cuba, the Peruvian producer co-operatives and even the Chinese communes.

But the philosophy, aims and organization of production co-operatives vary greatly according to the general social and political context.

In the market-economy countries, co-operatives have their part to play as regards the provision of inputs (co-operatives concerned with mechanization, artificial insemination, credit, etc.) or the distribution of agricultural and food products. In most DCs co-operatives are specialized by activity or product range, whereas in the LDCs there is growing recognition that multi-purpose village co-operatives are more fitted to meet the needs of a peasant community and to serve as basic social entities for carrying out the process of development.

**172 Development and the forms of socio-economic organization.** It is hard to assess the relative advantages of the various forms of agricultural production, especially as these various forms do not stem solely from economic considerations but depend on historical and political processes.

Furthermore, there are probably several ways of achieving economic effectiveness in connexion with the development process. The increase in the size of agricultural undertakings, their structure and their degree of mechanization depend however on a number of considerations, already referred to, such as the trend of the agricultural population in relation to population growth and the transfer of workers, technological development and technical control of production, the level of training and information of farmers and the relationship between agriculture and the agricultural and food industries.

It is none the less true that the socialist countries have established new production structures which radically differ from Western structures in respect of size and international organization. But collectivization poses other problems which are more of a social character. If these problems are not dealt with properly, agricultural growth may be curbed in various ways. Adaptation of organizational forms to technological development will not hasten growth unless it is accompanied by the formation of motivated social groups, who are linked by common ideals and are contented in their work.

When considered with an eye to development, the form and the size of production units depend basically on political decisions, relating in particular to the aims of land reform.

### *Training and information of farmers*

**173 Education and development.** Training and information standards are still very inadequate in the LDCs despite considerable effort of late. The LDCs suffer from a shortage of skilled labour and key personnel. Work done by Unesco [1] has clearly shown the correlation between literacy rates and development levels (the lower the proportion of farmers, the higher the relative numbers of trained personnel) and between the decrease in illiteracy and the industrialization of the West.

Work done in the last few years has thrown light on the relationship between education and the socio-economic system and between growth and education.

Viewed from the standpoint of development, education may be regarded as a historical category bound up with the stages and forms of socio-economic development.

In a traditional society, the social integration of young people, which is one of the purposes of the educational system, was achieved by family, tribe or other groups. The educational system was clearly the product of the socio-economic system.

The introduction of schooling and the development of education may be designed to trigger off a process of change and give young people their place in a new society. This is so when the subject-matter, teaching methods and structures of the educational system are in keeping with development aims. When a course of socio-economic development is embarked upon, one of the aims of education is to prepare people for change, but the expected change deriving from the educational system must be in keeping with the change that actually takes place. Otherwise the outcome is liable to be the social disarray of young people. If the system of general and vocational education results in giving rural youth an experimental attitude, providing them with the fundamentals of a new technology and raising their hopes and expectations, and if at the same time any initiative on their part is smothered by oppressive tradition and by outdated agrarian structures, then they cannot hope to achieve aims suited to their abilities, and a move to the big city may appear as the only solution.

The historical process of Western development has been marked by repeated complaints from the countryside that 'the best elements are being skimmed off', and in the LDCs the children of peasants are obviously not going to tie themselves to traditional agriculture for life if they can help it.

The real remedy lies in the socio-economic modernization of agriculture, which is the only solution likely to keep the children of peasants on the land with the call of a job to be done and a satisfactory standard of living. Obviously no sector of activity can hope to keep the best people unless it gives them the opportunity to use their knowledge and drive, together with surroundings that match their ambitions. Without socio-economic modernization of agriculture, schools tend to drive people from the land. The backwardness of agriculture limits its capacity to absorb those with education. If institutional reforms concerning land structures, the marketing of produce, the organization of credit and so forth—which are often essential to getting agriculture off to a proper start—are carried out, if the children of peasants 'see a positive reason for remaining in the rural areas and a promise of a better life there', the problem of revising school curricula will be easy to solve.[1]

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[1] Unesco, *World Illiteracy at Mid-century: a Statistical Study*, Paris, Unesco, 1957, 200 p. (Monographs on Fundamental Education, XI.)

A 'good education' cannot make up for the short-comings of economic policy; similarly, the educational system cannot be instrumental in development unless the political conditions make such development possible. Let us avoid any unfortunate confusion about the respective roles of education and economic policy.

**174 The rural and agricultural education system.** The rural and agricultural education system is a complex whole intended both to give young country-dwellers their place in society at large and to give those wishing to go in for an agricultural activity as satisfactory a course of vocational training as possible. For a great many reasons, the rural education system should not be regarded as a school system concerning young people of school age, but as a system of comprehensive lifelong training.

Functional literacy work, rural community development and agricultural extension services are means of training the adult called on to play a decisive part in the short-term development process. It should not be forgotten that agricultural development is at present being carried out by a high proportion of illiterate peasants, that practically all these peasants have an extremely low standard of training and that a considerable up-grading effort for adults is therefore needed.

The implementation of a rural education strategy in line with the agricultural development strategy is dealt with in another Unesco publication[2]. Here we shall therefore confine ourselves to considering the problems that arise solely from the standpoint of rural education.

With the urgent need for agricultural growth in the LDCs, the considerable consequences of this growth for part of mankind (satisfaction of nutritional requirements and implementation of the industrialization process) and acquisition of the knowledge necessitated by the twofold technological and socio-economic change, it should be easy to persuade those in charge of the educational system that agricultural training and information should feature prominently in it. Yet experience shows that this is seldom the case. In many countries agricultural education is a separate category which does not come under the general system of advice and guidance, does not lead to official qualifications, does not give access to higher education except in agriculture, etc. In many cases, agricultural education makes for social segregation and is rated lower than general education.

An educational system which puts a stigma on agricultural education in countries where agriculture has a fundamental part to play in the development process is obviously a system ill-fitted to development objectives.

To meet the twofold requirement of giving country people their due place in the national community at large and training the skilled people needed in farming, a rural education system should be integrated, functional, co-ordinated, global and lifelong.

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[1] F. Harbison, 'Human Resources Development Planning in Modernizing Economies', *International Labour Review* (ILO), May 1962.

[2] Louis Malassis, *Economic Development and the Programming of Rural Education*, 1st ed., Paris, Unesco, 1966, 59 p. (New revised edition in preparation.)

What is meant here by integrated rural and agricultural education is a system incorporated in the global system of education providing equivalent general training, allowing for any possible change of emphasis and specialization, guaranteeing the best pupils access to the highest university courses, conferring equivalent degrees, and so on. In other words, what is needed is an educational system making of the country-dweller a citizen like anyone else, with his rightful place in the national community.

This does not mean that instruction should not be adapted, or of course that the agricultural worker should not be trained for specific duties, but the important thing is that education as a whole should be open to young people from the countryside or from agricultural education, and that agricultural courses of study should be put on a par with the others.

The 'ruralization' of primary schooling, the rejection of comparability for diplomas, etc., are sometimes justified in terms of an endeavour to check the drift to the towns or to keep agricultural technicians on the land. This is a further instance of confusion of the aims of the educational system and those of economic policy.

Keeping agricultural workers and key personnel on the land implies, as already stated, a modernization of country living. Teachers and extension workers who, despite the attraction of the real or supposed advantages of the town, stay in the country because they are conscientious about their work, should be given financial incentives to do so. But it is disastrous, socially unacceptable, to assume the right to keep workers on the land by means of educational segregation.

The system of rural and agricultural education must be functional, in that the training it gives should be adapted to the pace and modalities of development. Agriculture needs trained workers, technicians and senior-level personnel. For the training of technicians and senior personnel to be geared to the process of development, agricultural training must be carefully planned. One of the main short-comings of present systems of education is that they do not produce enough technicians, the result being a very unsatisfactory ratio of technicians to graduates.

Also the training and information of women are often neglected. The woman's role in the improvement of living conditions is often decisive and receptiveness to technical progress and the implementation of development often depends to a large extent on women.

As regards the content of agricultural education it may be said in a general way that it should never lose sight of the two basic aspects of change: the technical and socio-economic aspects.

To meet the requirements of agricultural and over-all development agricultural education in most countries therefore requires energetic expansion and better adjustment to the country's needs.

The system of agricultural education must be co-ordinated both vertically (as regards the hierarchy of courses and types of establishment) and horizontally.

Analysis of technical progress and of the progressive society led us to distinguish between a creative phase and a phase of propagation, and, in more detail, between the phases of discovery, invention and development, innovation and dissemination. For each of these phases there are, within the over-all system (creation followed by propagation), specific institutions: research departments, experimental stations and extension services. Training itself has a strategic role to play throughout the entire system.

The various departments responsible for training and information in the rural environment, for creating and disseminating progress, must of necessity be co-ordinated, by a single supervisory authority, co-ordinating committees, etc.

'It is a common feature of agricultural education and training in many countries that its component parts operate in isolation from one another . . . '[1] Obviously if departments, establishments or experts work in isolation or indulge in professional rivalries, development conceived as an integrated whole will suffer.

It is also important that research workers, teachers, extension workers and community leaders should be informed of development plans, if they do not take part in their preparation. The plan should be the basis for gearing education more closely to the objectives of socio-economic development. In each of the development areas particular care should be taken to inform teachers of projects which are likely to affect the future of a larger or smaller proportion of their pupils. In order to be able to do their work properly teachers and information workers must obviously be well briefed on the outlook for employment and the qualifications likely to be required of workers in their area. This implies good co-ordination between the departments responsible for development and the education system and a good information network within the educational system itself.

A global and lifelong system of education means one which includes the whole rural community, aiming to improve the conditions of the community as a whole and to introduce lifelong education for all. Development is not based on the action of the individual but rather on a collective endeavour, aiming to affect the lives of the largest possible number as regards nutritional standards, health, social conditions and other spheres in which progress is to be desired.

In such a situation, as we have already said, functional literacy training, vocational courses, adult and further education, rural community and extension work, youth clubs, co-operatives, etc. are all different forms of education or educational institutions.

The process of development can only be implemented to the extent that the whole society feels involved. Rural extension services and community development work aim to inject new life both into the rural community as a whole and into its various institutions and to identify leaders who will have the whole community behind them when they begin the practical work of development.

As development is a process of social and technological transformation it must take place against a background of continuous reflection, training and information. The concept of lifelong education must not be confused with education for adults which aims to make good the deficiencies of their school education. In his untiring efforts to improve production and the life of society, man must never abandon the quest for knowledge. Lifelong education includes all the structures which enable him unceasingly to pursue knowledge in all its forms, at all levels and at all stages of his life. The task of rural community and extension services is thus never finished; socio-economic and technological changes never cease to challenge existing knowledge, institutions and methods.

Lifelong, global education lays the foundations for effective democratization of education; it lessens the prestige attaching to one period of life, a period marked by success or failure at school which often determines success or failure in life. In a more general way, in its vision of the community as an integrated whole, the system of rural and agricultural education may help to create genuine rural democracies.

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[1] United Nations, *World Conference on Agricultural Education and Training Report*, Vol. I, Copenhagen, FAO/Unesco/ILO, 1970, 2 vols.

### *The organization of markets and the distribution of agricultural and food products*

**175 Markets and distribution networks in LDCs.** Certain features of the marketing system are associated with particular forms of socio-economic organization in agriculture. Under semi-feudal or semi-capitalistic systems, for example, the farmer may not be allowed to buy goods outside the estate. Instances of farmers being obliged to patronize the shop of the 'lord of the manor' or 'boss' and to use the landowner's mills and presses for processing recall similar obligations that existed under the Western feudal system. Such restrictions, which often involve the farmer in debt, were used to tie him to the land and keep him in a subservient position.

On account of their size semi-capitalistic or semi-feudal estates are offered very favourable terms on the market for agricultural products and inputs, or else operate their own distribution networks.

The peasant farmer, whose income is low, whose savings are non-existent and who is very often obliged to borrow money from the merchant, must more often than not sell his crop at harvest-time (low prices) or sometimes even earlier, buying it back during the period leading up to harvest (very high prices) in order to meet his immediate needs.

In general, markets for agricultural and food products in LDCs are characterized by fluctuating supply (quasi-natural production conditions) and a serious shortage of food, a situation which makes for very unstable prices and is further aggravated by the lack of technical infrastructure for transport, storage, processing, marketing, communications, etc. 'Particularly in Africa and parts of Latin America, large quantities of agricultural products have still to be transported over long distances by bicycle or donkey before they reach roads accessible to trucks.'[1]

In many countries animals must cover long distances to reach processing and consumer centres, which obviously affects their quality. Thus heavy losses are sustained in the process of marketing both plant and animal products.

The farmers themselves may also contribute towards price fluctuations. In some areas their aim is a minimum monetary income which will enable them to meet their financial obligations and purchase certain consumer goods of industrial origin which they consider to be basic necessities. In such a situation the high prices obtaining in a poor year may lead them to sell less (and consume more), while in a relatively good year, when prices are low, they will sell more and consume less. This phenomenon is known as 'inverse supply'.

There is little or no relationship between prices and production costs. Prices in the main are 'market prices', determined essentially by supply and demand and by market structure. The cost of production is in any case generally a 'non-monetary cost', consisting mainly of the farmer's labour and including very few purchased inputs.

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1. FAO, ***Provisional Indicative World Plan for Agricultural Development***, op. cit., Vol. 2, p. 365.

Prices vary from one producer to another on account of the oligopsonic structure of agricultural markets, the personal ties binding the farmer to the merchant (on account of the money he owes him) and the diversity of the products marketed.

Moreover fraudulent weighing and measuring operations are commonplace. In some areas monopoly buying and selling firms still operate. The merchant who buys agricultural products (for example ground-nuts) also sells manufactured products (for example textiles), and can manipulate combined buying and selling operations.

Agricultural products for export are usually bought up by import–export firms which specialize in combined buying and selling operations and have a network of agents in the hinterland.

Such a state of affairs is obviously not likely to encourage increased production or to promote the cause of rural development. Yet the process of over-all development implies an increase in monetary demand for agricultural and food products and an increase in demand for the goods required for agricultural production, so that the marketing and distribution of agricultural and food products actually increases in importance.

**176 The improvement of markets and distribution networks.** This can be brought about by general measures to improve the training and information of farmers and merchants, market surveys and planned production, standardization of products designed to meet consumer requirements, supervision of weights and measures, the introduction of institutional credit designed to rescue the farmer from the clutches of money-lenders, etc. All these measures may be taken by or with the encouragement of the State, which may of course feel it necessary to take even more radical measures.

In countries where the operation of the private sector gives little grounds for complaint, the action of the public authorities may be limited mainly to price stabilization. For unstable prices mean unstable agricultural incomes which make it more difficult to modernize agriculture and raise the standard of living. In countries where the standard of living is relatively low and expenditure on food is an important item in the family budget a sudden rise in prices will hit consumers hard. Prices may sometimes be stabilized at international level by the public authorities. 'In India direct control over massive imports of grain has aided the policy of the Indian Government in controlling market prices'.[1] The same end may also be achieved by price-regulating agencies operating a storage policy which buy or sell produce according to price trends. Action taken to regulate supplies in this way may however prove inadequate; it then becomes necessary to fix 'floor' and 'ceiling' prices.

Some LDCs have decided to nationalize foreign trade or to set up export agencies. A country's position in the export market is strengthened by such concentration and by organization of foreign sales promotion. Export agencies may either be given a monopoly or empowered to co-ordinate the export trade.

On the domestic market co-operative organization is generally encouraged. As we have already said these tend to be 'semi-co-operatives' in which the authorities play a relatively important part owing to the shortage of qualified staff and the poor standards of information and training of the farmers concerned.

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1. FAO, *Provisional Indicative World Plan for Agricultural Development*, op. cit., Vol. 2, p. 367.

These co-operatives may distribute both agricultural products and farm and household requisites (fertilizers, etc.). Such all-purpose village co-operatives seem better suited to the conditions prevailing in LDCs than specialized co-operatives.

**177 Price policy.** Price fluctuations in time and space may be reduced by improving market mechanisms, standardizing products, developing technical infrastructure, creating institutional credit facilities, etc. But if agricultural workers are to feel encouraged to increase their production the higher consumer prices resulting from increased effective demand for agricultural products must be reflected in higher prices for producers rather than allowing the distribution network to absorb the increase for its own benefit.

In most LDCs governments which fear the inflationary effects of higher food prices tend to introduce price supervision and control measures and even sometimes to oppose any increase in prices. This tends to discourage agricultural production in which case farmers' incomes stagnate and the agricultural sector is unable to stimulate industrial growth by increasing demand for industrial products.

Agricultural price policies are difficult to operate for they must neither discourage producers nor set off a chain reaction of price rises. In some cases producer prices may be subsidized, thus encouraging production without affecting consumer price. It may however be difficult to finance such a policy and limited financial resources can often be put to better use.

The price policy affects not only prices of agricultural products but also those of primary inputs, the demand for which increases as development progresses.[1]

### *Organization of institutional credit*

**178 Credit and investment in LDCs.** Forms of saving, investment and credit depend on the socio-economic organization of the agricultural sector. In subsistence agriculture investment will be used to improve the land, to build often very primitive accommodation, tracks, etc.; labour available on the spot will most often be used to carry out such improvements. Adding to livestock is also a very common form of saving.

In a semi-feudal agricultural society landowners invest relatively little in their land. Land improvement is carried out by their own workers and they even increase the value of their real estate by making subsistence holdings available to the agricultural population on condition that they carry out land improvement.

In the capitalistic plantation system savings are obtained mainly from abroad and by ploughing back profits.

In peasant agriculture, once a farmer's income has risen above subsistence level he tends to accumulate funds which can be used to improve his holding. In general peasant farmers who own their holdings make great efforts to improve them and to maintain the value of their property.

The peasant farmer in LDCs must often resort to borrowing money, both as a producer and as a consumer. It is in fact difficult to draw a distinction between

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1. John W. Mellor, *The Economics of Agricultural Development*, New York, N.Y., Cornell University Press, 1966.

these two types of credit in low-income countries, where the borrower must meet the requirements both of his family and of his farm.

A survey carried out in India in 1955 showed that three-quarters of borrowed money was supplied by money-lenders and merchants, 14 per cent by close relatives and friends and only 3 per cent by institutions. In 1962 the proportion of institutional credit had risen to 15 per cent.[1] Although the rate of interest demanded by money-lenders could rise to 40 or even 100 per cent per annum[2], experience has shown that it can to some extent inhibit the development of institutional credit on account of the ease with which it is obtained (no red tape), its flexible terms (no distinction between consumer and producer credit) and its personal nature (the money-lender, knowing the farmer personally, is able to assess his 'credit rating'). However, when land is given as surety and inability to work, illness or poor harvest prevent the farmer from repaying his debt the land may be seized, which when underemployment is rife may be a calamitous blow for the farmer and his family. 'The tragedy of a man losing his land is replayed throughout the developing world each year. In some countries of Asia almost every village is affected as a matter of course.'[3]

**179 The introduction of institutional credit.** High rates of interest and fear that their land will be seized do not encourage farmers to borrow money. However, credit is necessary from time to time to tide the family over a difficult period, to facilitate short-term production and marketing operations or to modernize the holding and achieve a long-term increase in production. Modernization of the holding implies simultaneous modernization of the infrastructure and of the para-agricultural sector. In fact, as agricultural development proceeds, investment in the para-agricultural sector and the infrastructure grow more rapidly than investment in the agricultural holding itself.

In order to expand credit facilities and encourage farmers to borrow money without involving them in a process of self-perpetuating indebtedness from which there is no escape and which may lead to their eviction, it is essential to organize institutional credit.

State intervention can also be justified by the need to make full use of rural savings which in many cases must finance both the development of agriculture and that of industry. A carefully thought out fiscal policy coupled with a policy of credit and subsidies could both direct savings towards investment in national priorities and be used to modernize and improve the general orientation of agricultural production. Such policies are of course very difficult to 'adjust' and implement.

Credit institutions may take several forms, depending on the historical context and the level of development. It is, however, essential to establish institutions which are adapted to the specific needs and attitudes of farmers. They should avoid unnecessary red tape, giving preference wherever possible to loans requested for personal and educational reasons and laying down rules to protect the farmer from undue risk.

Co-operative credit has proved particularly well suited to the rural environment in many parts of the world. In LDCs this form of credit requires the participation of the public authorities in regard to funding, and also for supervising management of the fund and the allocation of loans. It has the great advantage of linking the farmer himself with the management of the fund and of training people for more responsible administrative functions at a later stage.

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[1] FAO, *The State of Food and Agriculture, 1967*, op. cit., p. 108.

[2] FAO, *Provisional Indicative World Plan for Agricultural Development*, op. cit., Vol. 2, p. 359.

[3] ibid.

### *The role of government institutions and services in development*

**180 Planning and participation.** There are many different paths to development but nearly all LDCs recognize that development must be planned. Planning bodies may concentrate on promotion and co-ordination (flexible planning) or they may make and implement the decisions which determine the modalities of development (integral planning). The development plan is necessarily over-all, in other words brings the different sectors and different areas within the over-all process of development. This means that the plan, say, for agriculture or for the agricultural development of a given area can only be determined in relation to the over-all plan, without which it has no meaning.

Decisions involving the plan must therefore necessarily be joint decisions, reached by consultation and agreement between different government departments, sectors and areas. This process of consultation and agreement may take various forms; it may for example take place in the form of committees, convened and co-ordinated by a planning ministry.

One crucial problem is that of ensuring the participation of the population at large in the process of development. In many cases grass-roots participation is poor or even non-existent, usually because of low standards of information and education. One of the aims of extension activities for development, particularly in rural areas, is to identify and help to train men who will, in varying degrees, be capable of planning, implementing and evaluating the results of development policies.

Co-ordination of government services and involvement of the people are two of the major objectives of institutions set up to promote development. In many cases government action is fragmented between too many ministries and departments. Government action concerning agriculture, for example, should be co-ordinated by a single ministry which should be sufficiently decentralized to be represented down to grass-roots level, thus ensuring close and continuous contact with the agricultural population.

**181 The departments of the Ministry of Agriculture.** The number and size of the departments of the Ministry of Agriculture will depend on the role of the public authorities in the process of development and on the organization of the ministry itself. Its more important divisions will include the following: departments for planning and management, plant and animal production, research and experimentation, education and extension work, land reform, etc.

Several types of organizational charts are conceivable, but this is not the place to discuss their relative merits and disadvantages. Attention should however be drawn to the importance of good organization in government institutions and departments, and of the professional competence and sense of responsibility of public officials as factors determining the success or failure of development programmes.

Another important point is the question of the grading of salaries in government departments. This should in principle correspond to the importance of the official's role in the process of development, but such is not always the case.

Attention should be drawn in particular to the importance of agricultural extension workers and field staff, whose work brings them into constant contact with farmers, often under difficult conditions, and who therefore play a decisive role in the implementation of field operations which are in the last analysis what development is made of.

## Alternative paths to development and alternative types of planning

**182 Alternative paths to development.** There are two basic methods (each with several variations) of ensuring economic growth and the structural changes which it involves: that of the market economy which operates under the capitalist system and that of the planned economy which is found mainly in socialist systems.

The market economy itself can take several forms, from the liberal or competitive model, which can also be called the free entreprise model, to the planned system of mixed public and private enterprise.

In most Western economies the State tends to play an important part in controlling the production and distribution of wealth. The importance of the State's role in this respect can be assessed by showing current State expenditure as a proportion of GNP. In 1967 in the OECD countries these percentages ranged from 21 per cent (Spain) to 36 per cent (Sweden). The State intervenes in the socio-economic life of the community in many ways through monetary and budgetary policies, through science policy (e.g. by sponsoring research in key sectors or those which call for considerable capital outlay, such as atomic research, space research, etc.), through production and distribution policy (measures affecting production and internal and external market mechanisms), through the eradication of poverty and the redistribution of wealth (social security), etc.

Paul Samuelson [1] has described Western capitalism in its present state of development as a system of mixed public and private enterprise.

In the immediate post-war period both the United Kingdom and France nationalized certain key sectors or basic industries (gas, electricity, coal, etc.).

France also adopted the principle of flexible planning, which combines market mechanisms with State intervention in order to achieve previously determined social objectives. So long as these objectives are being achieved by the natural interplay of market forces these are given a free rein, but otherwise natural trends are either spurred or discouraged by appropriate measures. The plan is an instrument which forecasts over-all development, co-ordinates Government action and harmonizes private and public initiatives.

Since the Second World War a number of countries have taken the socialist path to development and adopted the planned economy system. However several variations exist, from flexible decentralized planning (Yugoslavia) to integral centralized planning (U.S.S.R.).

The State is bound to play a key role in the process of development in all LDCs. State intervention may be justified by a lack of entrepreneurs, inadequate private savings and investment, the need to bring about radical changes in a short time, to establish strategic industries, to reduce basic disequilibria (of employment, savings and investment, balance of payments), etc. The implementation of a development strategy necessarily entails the formulation and execution of a plan, and here the State's role is decisive. This role has devolved upon the State as a result of historical factors and the widely held conviction that market forces and private savings alone cannot bring about development in LDCs.

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[1] Paul Samuelson, *Economics, an Introductory Analysis*, New York, N.Y., McGraw-Hill, 1967.

The economic system in which the State is called upon to play a decisive role is often described as State capitalism. Use of this expression reflects the fact that production relations are, to a certain extent, those of the capitalist economy (based on wages), but that a greater or lesser proportion of the means of production are subject to public approval.

A system of State capitalism develops when there is a State sector financed with public funds and foreign trade, mining, agricultural property, foreign industrial and commercial concerns and the like are nationalized or made subject to State supervision, the State establishing an infrastructure, key industries, marketing boards, etc.

Most economists agree on the importance of the public sector's role in the economic take-off of the LDCs; they differ rather on the relative importance of the public and private sectors.

Lastly, the purpose served by a system of State capitalism depends to a large extent on the political structure and on the social groups in power. State capitalism may be a temporary arrangement leading on either to private capitalism (Japan) or to socialism (the NEP period in the U.S.S.R.).

### *Introduction to planning techniques*

**183 The need for planning in LDCs.** The radical differences between DCs and LDCs relating to the historical context, the structure of international trade, recent technological progress, the achievement of socialism in individual countries, experience acquired in the sphere of development, etc., lead to the conclusion that LDCs will have to use methods specially adapted to their specific situation if they wish to speed up their economic development.

Most specialists recognize the need for planning in LDCs.

> By the second half of the 1950s, the formulation of plans, generally for five years, had become established practice through much of the Far East, and was rapidly spreading in the Near East and Africa. The last to enter the field, on the whole, were the countries of Latin America, most of which drew up their first plans only in the first half of the 1960s [4, p. 143].

The economic functions of planning may be listed as follows:

Determination of medium-term social objectives.

Determination of over-all and sectoral growth rates for maximum growth.

Determination of the components of growth, for example increase in employment figures as against population increase, accumulation of capital in relation to the savings coefficient, over-all technical progress and partial indices of productivity.

Determination of transfers of resources with a view to adjusting the capacity of sectors to their economic function.

Achievement of the basic equilibria (employment, savings and investment).

Determination and execution of policies for growth, development and progress in relation to the objectives to be achieved and means to be used.

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Although LDCs are in unanimous agreement on the need for planning, there are many differences of opinion regarding its objectives, its nature and its functions. Some people see planning as a completely neutral technique, which can be applied by any socio-economic system. For others the significance of planning is determined basically by the socio-economic system which implements it. It is obviously impossible for planning to be an instrument of a socialist economy when applied within the context of a capitalist economy. But planning may be a means of harmonizing and correcting the capitalist economy, if the State is able to fix objectives towards which capitalist tendencies do not converge 'naturally' and if it has at its disposal effective means of implementing its social adjustment policy.

Two great dangers attend both planning and State capitalism: the danger of building 'castles in the air' and that of regarding the State as all-providing. Plans do not only need to be prepared, written and published, they also have to be carried out.

In LDCs the State represents power but the all-powerful State is not always capable of bringing about development. Moreover the servants of the State do not always prove to be great servants of the nation. The professional competence and integrity of civil servants are two basic factors determining the success of State capitalism.

**184 An introduction to basic techniques.** Detailed discussion of planning techniques is unfortunately impossible within the context of this study. The diagram reproduced in Figure 18, however, sets out the basic *problems* of planning. Our comments will begin at the bottom of the diagram, that is to say with available manpower, and follow the arrows. In the course of these comments the reader will come across implicit references to many equations with which we are now familiar and shall not therefore reproduce in the text.

Forecasting of population growth is the basis of all planning. From these figures it is possible to estimate both over-all production capacity, bearing in mind forecast trends in productivity, and the total increase in final consumption. They also provide the basis for educational planning. In order to use this technique basic statistics must be obtained on birth rates, death rates for each age group and on foreseeable net migration. Population growth is one of the basic components of the increase in final consumption. This increase also depends on the increase in *per capita* income, which means that an assumption must be made regarding the over-all rate of growth.

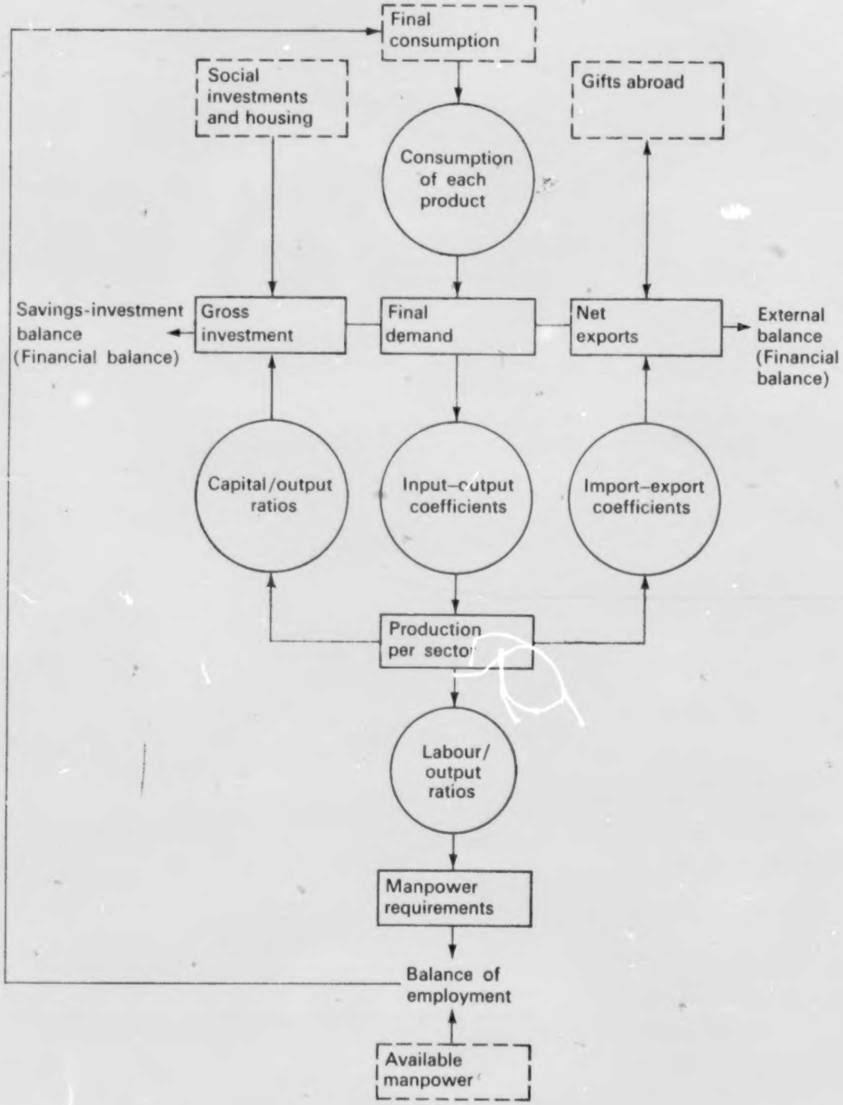
But it is not enough to estimate the increase in final consumption. Increased demand goes hand in hand with diversification of demand; figures must therefore be given for each category of product consumed.

There are several methods of estimating increased demand for each category of product, which may moreover be used concurrently: extrapolation of current trends (the least accurate method), reference to certain standards (for example nutritional standards), comparison with the consumption of countries which have reached a similar stage of development, use of elasticity coefficients, economic methods, etc.

Total final demand equals the sum of final demand for consumer goods, capital goods and net exports.

The intense competition on external markets makes it a very difficult and hazardous business to forecast external trade figures. LDCs must also estimate

FIG. 18. Outline of plan (after E. Betout-Mosse, 'La Comptabilité Nationale dans la Préparation du V$^{e}$ Plan', *Études et Conjonctures*, No. 45, April–May 1963, p. 269). The diagram starts with 'available manpower' and ends with 'manpower requirements', partly for technical reasons and partly because of a desire to achieve full employment if possible. But the balance of employment depends on two other 'balances' encountered *en route*, the balance of payments and the savings–investment balance.


Final consumption
Social investments and housing
Gifts abroad
Consumption of each product
Savings-investment balance (Financial balance)
Gross investment
Final demand
Net exports
External balance (Financial balance)
Capital/output ratios
Input–output coefficients
Import–export coefficients
Production per sector
Labour/output ratios
Manpower requirements
Balance of employment
Available manpower

their ability to import, which will depend on the supply of foreign currency and prices of imported goods. LDCs generally try to substitute home-produced goods for imported goods and prefer to import capital goods, but must often resign themselves to importing consumer goods which are considered to be vital necessities. Finally the effect of projected growth rates on the balance of payments must be calculated. Successive adjustments to the result will probably be necessary.

Demand for capital goods is a function of the ability to invest, which means that the balance between savings and investment must be borne in mind. The LDCs' ability to invest can, as we have seen, be increased by gifts, loans and investment from abroad. Each of these methods has its advantages and its drawbacks, but in each case the effects on the balance of payments must be assessed.

Balanced growth implies that the production of each sector is adjusted to the structure of demand. We have seen that countries may decide not to meet demand in certain sectors but to give priority to others which are considered to be of strategic importance, for example by reducing production of certain consumer goods in order to concentrate on capital goods, etc.

But in all cases the production of goods for final demand involves the production of intermediate goods. As we know, the relationship of sector production to intermediate consumption is expressed by input–output coefficients. When these coefficients are known it is possible to determine production of intermediate goods, and eventually the total production, required to meet final demand.[1]

Once total production has been determined for each sector it is possible, using the incremental capital/output ratio, to determine the investment required by each sector and to check the balance of savings and investment. Further adjustments may prove necessary.

Similarly the labour/output ratios will make it possible to determine employment in each sector and eventually total employment. The balance of employment can then be established. If the underemployment figures still seem excessive further adjustments will be necessary. Preference might for example be given to labour-intensive rather than capital-intensive techniques.

The reader has no doubt realized that successive adjustments are part of the process of planning, and will remember that our aim was simply to describe the general approach to the problem of planning and not to specify possible (or impossible) solutions.

One very important question which cannot be tackled in this study concerns major investment projects. Such projects should be listed, considered and selected on the basis of their social productivity, within the limits of available resources.

**185 The problems of agricultural planning.** Planning as a method of organizing development has gradually been accepted in most LDCs. 'Many of the earlier plans tended to neglect agriculture in comparison with other sectors of the economy'. [4, p. 143].

Two major reasons can be put forward to account for this situation: the fact that priority is normally given to industry and the difficulties encountered in agricultural planning.

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[1] A convenient way of determining this figure is the technique known as inversion of the resources and uses table (inversion of the structural matrix).

These difficulties are peculiar to agriculture, being connected with fluctuations in production (what has to be planned is production capacity rather than production itself) and with the extremely fragmented social organization of agricultural production when the agricultural sector is composed of a large number of small, semi-subsistence holdings.

Furthermore, as our analysis of the mechanisms of development has shown, agricultural planning cannot be really effective unless it is placed in the context of a national economic plan. This is mainly because of the links between agricultural exports and the ability to import capital goods, between the growth of effective demand for food and that of food production, between increased industrial demand for the transfer of agricultural workers and productivity trends in agriculture, between the financing of new jobs outside agriculture and the formation of savings in agriculture, etc.

If agriculture is the 'leading' sector in the economy its growth should as a general rule be maximized in order to maximize the surplus. If on the other hand its role is to follow suit or 'adjust', its growth must be attuned to the over-all rate of growth.

Balanced internal growth implies that the increase in food production can meet increased demand. The latter is equal to the increase in subsistence consumption (increase in the agricultural population) plus increased effective demand in the non-agricultural sector (increase in the non-agricultural population and in *per capita* incomes)

$$r_d = \beta r_{ds} + (1 - \beta) r_{dc}$$

where $\beta$ = relative importance of subsistence agriculture; $r_{ds}$ = rate of growth of subsistence agriculture; $(1 - \beta)$ = relative importance of market-oriented agriculture; $r_{dc}$ = rate of growth of market-oriented agriculture.

In theory the expected increase in demand is comparable with the expected increase in total food production:

$$r_a = \alpha_N r_N + \alpha_K r_K + r_R$$

where $\alpha_N$ = relative importance of labour in combined primary inputs; $r_N$ = rate of increase of jobs in agriculture; $\alpha_K$ = relative importance of capital in combined primary inputs; $r_K$ = increase in capital; $r_R$ = technical progress (growth of total productivity).

Finally, assuming that internal growth is balanced, we can write:

$$r_d = \beta r_{ds} + (1 - \beta) r_{dc} = r_a = \alpha_N r_N + \alpha_K r_K + r_R.$$

This formula can be used as a basis for consideration and discussion of various assumptions regarding the growth of demand and production.

To provide a complete picture it should also include an estimate of how the situation is developing in regard to non-food agricultural products and exports.

In practice the information available does not make it possible to arrive at a satisfactory estimate of the total agricultural production function. In the process of planning expected demand must be matched with expected production. For agricultural production minimum and maximum variants may be established.[1]

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[1] Edward F. Szczepanik, 'Targets and Financing of Agricultural Development', *Monthly Bulletin of Agricultural Economics and Statistics*, January 1969.

The minimum variant can be obtained by extrapolating recent production trends. This is a very rough and ready approach but it can nevertheless give useful information on the effects which these trends will have on the food production balance, employment, agricultural incomes, savings, investment and the balance of payments if they are continued. The maximum variant represents the fullest possible expansion of agricultural production, bearing in mind socio-economic changes and technological innovations which are to be introduced. Factors which may be assessed in this context are the effects of widespread land reforms, changes in the structure of production units, the extension of education, re-organization of distribution for food and agricultural products, etc., as well as changes in the total production function in relation to cultivated surface area, employment, capital, sector purchases, etc.

Somewhere between these two extremes, the maximum and the minimum, a choice must be made which takes into account the over-all objectives of planning, the role of agriculture in the process of development and maintenance of the basic equilibria or the reduction of disequilibria. No rules can be laid down; the various possibilities must be stated and figures worked out and discussed.

It is obviously impossible to deal fully with techniques for agricultural planning in this study; all we can do is to put forward a few isolated considerations. 'There is a wide variety of situations as regards experience with planning and the availability of the necessary administrative, organizational and statistical bases for it. While a few countries have reached a level at which plans can be formulated on the basis of sophisticated techniques and implemented with reasonable efficiency many others are at a stage where only the most rudimentary planning is possible' [4, p. 145].

### *The* Indicative World Plan

**186 An 'unprecedented' long-term international study.** In 1970 FAO published its *Provisional Indicative World Plan for Agricultural Development* (*IWP*). The English edition is in two volumes with a total of 670 pages. A summary of the plan together with its main conclusions can be found in a smaller publication to which we shall mainly refer in this text [5]. This plan is a 'unique and pioneering experience in the field of international perspective planning' [5, p. 1]. Preparatory work was carried out in countries which represent 85 per cent of the population and of the GDP of LDCs. Countries were divided into three categories: A. Developed market economies DC(M)s; B. Centrally planned economies DC(P)s; C. Developing countries (LDCs).

Sixty-four countries were studied in category (c). They were subdivided into four zones: Africa south of the Sahara, Asia and the Far East, Latin America, the Near East and North-west Africa.

The base year is 1962 (or the average over 1961 to 1963), and the target year 1985. As the FAO experts are the first to admit, this is not really a plan but a long-term study, an attempt to set out the problems in a way 'which would provide an international frame of reference to help governments formulate and implement their agricultural policies' [5, p. 1].

There is no shortage of reasons to justify such an undertaking: its projections throw light on the future and make it possible to identify major trends and adapt the economic policy accordingly; it defines a strategy for agricultural development which takes account of the population explosion and international trade patterns;

and in a more general way it provides a touchstone for the agricultural sector's ability to fulfil its economic functions within the process of development.

It is an ambitious undertaking whose full significance can only be appreciated in relation to the development process seen as a whole (the relationship between agriculture and industry); in other words, it calls for a similar long-term analysis of the world economy in its entirety. Even in its present form, however, the *IWP* is a mine of useful information.

**187 The outlook for agricultural development in LDCs.** The basic characteristics of agriculture in the national economy of the LDCs are shown in Table 37 (year 1962).

The *IWP* is based on the assumption that GDP will increase between 4.9 per cent and 5.9 per cent from 1962 to 1985 (as against 3.8 per cent to 4.8 per cent in the past). In these circumstances 'agricultural GDP would have to grow at between 2.9 and 3.3 %, and gross value of agricultural production at from 3.4 to 3.9%, if agriculture were to fulfil its allotted role and not act as a brake on overall development' [5, p. 3] (Table 38). If the over-all rate of growth were set at a higher level agriculture would obviously have to make a correspondingly greater contribution. In fact, as we have seen, the rate of growth of agricultural production was of the order of 2.6 per cent from 1960 to 1968 (2.1 per cent in Africa and 2.4 per cent in the Far East). Agriculture will therefore have to increase its annual growth rate by nearly 50 per cent.

The *IWP* did not determine desirable demand for food (in the light of standards of nutrition) but effective demand for food [5, p. 5] as resulting from growth in population and in *per capita* GDP. Demand for food is thus expected to increase by 3.0 per cent per annum, 70 per cent of the increase being due to population expansion and 30 per cent to increase in *per capita* incomes.

If past rates of agricultural expansion were not improved, the foreseeable increases in food demand would lead to serious disequilibria or require colossal increases in food imports in 1985 (multiplication by a factor of 13) [5, p. 8].

In fact the opposite is required: agriculture's contribution to export revenue must be increased, for agriculture will probably continue to be the main source of foreign exchange in many countries [5, p. 12]. However the outlook in this sphere is rather bleak, as 'exports to high-income countries can no longer serve as the same powerful stimulus for growth as in the past, unless very substantial concessions are made in production and trade policies of Zones A and B to benefit agricultural export earnings from developing countries' [5, p. 12-13]. The arguments given in support of this thesis are those already enumerated: progressive saturation of *per capita* needs in the importing countries, fiercer competition from synthetic products, increased production in the DCs, import duties on processed products (often on a scale proportional to the degree of processing), low imports by the DC(P)s and consumer taxes on certain products.

These trends emphasize the need both to orient production towards products which are competitive on the international market (beef and veal, fishmeal, processed products based on tropical woods) and to replace imports by increasing national production.

**188 The outlook for employment.** One of the most important conclusions drawn from the *IWP*'s projections is that the agricultural population will continue to increase in absolute terms during the period covered by the plan although decreasing in relative terms.

TABLE 37. Basic characteristics of agriculture in LDCs in 1962 and 1985

| developed countries (1) | Cultivated area per member of the agricultural population (in hectares) (2) | | Cultivated area per member of the total population (in hectares) (3) | | Coefficient of intensity of cultivation over whole arable area (4) | | Irrigated area as a percentage of total arable area (5) | | Fertilizer per hectare harvested area (kg of nutritive elements) (6) | | Tractors per thousand hectares harvested area (7) | | Contribution (percentage)[1] (8) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | 1985 | 1962 | 1985 | 1962 | 1985 | 1962 | 1985 | 1962 | 1985 | 1962 | 1985 | of area | of intensity of cultivation |
| ca south of the Sahara | 1.10 | 0.89 | 0.9 | 0.62 | 42 | 52 | 0.7 | 1.0 | 0.8 | 6.7 | 0.3 | 0.6 | 55 | 45 |
| and the Far East | 0.45 | 0.31 | 0.31 | 0.19 | 100 | 121 | 20.9 | 30.5 | 6.0 | 79.5 | 0.4 | 4.1 | 22 | 78 |
| n America | 1.49 | 1.32 | 0.64 | 0.43 | 54 | 60 | 8.1 | 10.3 | 11.6 | 64.2 | 5 | 8.0 | 68 | 32 |
| r East and North-west Africa[2] | | | | | 51 | 59 | 31.4 | 31.8 | 11.9 | 55.4 | 1.2 | 3.4 | 55 | 45 |
| | 0.83 | 0.72 | 0.54 | 0.32 | 67 | 81 | 3.7 | 6.3 | 9.2 | 42.2 | 2.8 | 4.2 | | |
| Total for Zone C | 0.72 | 0.56 | 0.48 | 0.31 | — | | — | | — | | — | | 52 | 48 |

ontribution to the increase in harvest made by expansion of arable area and intensification of cultivation methods.
olumns 4, 5, 6 and 7 distinguish between the Near East and North-west Africa.

ce: FAO, *Provisional Indicative World Plan for Agricultural Development. Summary*, p. 14, 17 (for cols. 2–7), p. 22 (for col. 8), Rome, FAO, 1970, 72 p.

TABLE 38. Growth rates proposed by the *IWP*, 1962–85

| Less-developed countries (1) | Total population (2) | Total GDP[1] (3) | Food demand (4) | Percentage of increased demand due to increase in population (5) | Percentage of increased demand due to increase in *per capita* income (6) | Agricultural GDP[2] (7) | Agricultural production[3] (8) |
|---|---|---|---|---|---|---|---|
| Africa south of the Sahara | 2.6 | 4.9 | 3.5 | 77 | 23 | 3.2 | 3.4 |
| Asia and the Far East | 2.5 | 5.9 | 4.1 | 64 | 36 | 3.3 | 3.9 |
| Latin America | 2.9 | 5.6 | 3.5 | 88 | 12 | 2.9 | 3.4 |
| Near East and North-west Africa | 2.8 | 5.5 | 3.9 | 74 | 26 | 3.1 | 3.7 |
| TOTAL LDCs | 2.6 | 5.6 | 3.9 | 71 | 29 | 3.1 | 3.7 |

[1] High variant.

[2] Growth of the GDP of agricultural origin or of gross value added by agriculture.

[3] Growth in production of the agricultural sector (value of final agricultural production at constant prices).

*Source:* FAO, *Provisional Indicative World Plan for Agricultural Development. Summary*, p. 3, Rome, FAO, 1970, 72 p.

For the LDCs as a whole the agricultural population is seen as decreasing in relative terms from 67 per cent to 55 per cent from 1962 to 1985, but increasing in absolute terms by almost 50 per cent, rising in numbers from 935 to 1,388 million. During the same period arable surface area per inhabitant would drop from 0.48 to 0.31 hectares and from 0.72 to 0.56 hectares per head of the agricultural population. Examination of trends for Asia has shown that, taking the rate of growth for the non-agricultural population as 3.8 per cent per annum and that for the agricultural population as 2.5 per cent the agricultural population would not reach its maximum until after the year 2000 [5, p. 15].

'Whilst this applies most acutely to Asia, the Near East and North West Africa, there is likely to be a deepening crisis of poverty and underemployment throughout the developing world if population growth continues at its present rate' [5, p. 16].

Recognition of these basic trends leads to various conclusions and in particular emphasizes: (a) the importance of family-planning policy in certain areas; (b) the need to accelerate the rates at which jobs are created outside agriculture; (c) the need to intensify agricultural production.

**189 Employment policies.** The conclusions of the *IWP* have undoubtedly contributed towards a clearer awareness of the problem of employment.

FAO's report for 1970 [4] devotes one chapter to rural employment. 'In overall terms, the developing world will have to increase agricultural employment during the Second Development Decade by about 13%, equal to an addition of 48 million jobs to the 1970 level. If past trends prevail, non-agricultural employment will increase during this period by 40%, or 98 million jobs' [4, p. 183]. These data alone are sufficient to illustrate the magnitude of the task which has to be accomplished in both the agricultural and the industrial sectors, and the competition which is likely to result between the two for allocation of resources. It would no doubt be preferable to accelerate industrial growth but various constraints are encountered here, such as shortage of capital. In certain cases preference may be given to labour-intensive industrial activities or methods, but this is not always the case. It is often suggested that non-agricultural jobs, on a full-time basis, should be created in rural areas [4, p. 186].

In overpopulated areas part-time activity in agriculture enables family resources to be diversified, but experience has shown how difficult it is in LDCs to introduce non-agricultural jobs successfully into rural areas [4, p. 186].

In agriculture the problem is to expand methods and types of production which require a high labour input and little capital, while at the same time ensuring an increase in production and in productivity. This would often conflict with the widely held view that modernization involves the mechanization of agriculture. To increase the capital/output ratio in an economy where there is underemployment, unless this is economically essential, inevitably leads to wastage of economic resources and does not help to solve the problem of underemployment. When implementing development plans it is therefore particularly important to be aware of the relationship between the different indices (capital/output ratio per worker, employment and productivity).

Employment in rural areas can only be maximized by a series of integrated operations including intensification of agriculture (on the basis of labour-intensive crops), the development of agro-industry, public works programmes to establish infrastructures in rural areas, reafforestation work, soil conservation, better use of water resources, etc.

Increase in the agricultural population leads eventually to an expansion in subsistence agriculture. In all areas, therefore, the production of subsistence crops must be intensified and modernized if the standard of living of the rural population is to be improved.

**190 What is needed to intensify agricultural production.** Population increases and higher *per capita* incomes lead to an increase in demand for food. This increase may be met either by bringing more land under cultivation or by increasing final production per hectare or, and this is the most popular solution, by a combination of extension and intensification. In traditional agricultural economies growth is based mainly on the extension of cultivated areas into forest and pasture land. 'The *IWP* evaluation indicates that practically the entire potential arable area will be under the plough in South-East Asia and North-West Africa by 1985, that a number of Near East countries would be very close to utilizing their full potential, that around 80% would be taken up in Central America, and that a similar situation would apply in parts of East and Central Africa. In these areas agricultural intensification and the use of modern technology to raise productivity per unit of cultivated land must therefore be looked on as an imperative for survival' [5, p. 18].

Production may be intensified and production per hectare increased either by improving the yield per hectare or by increasing the number of crops harvested during a given period. 'In much of North Africa and the Near East over 50% of the arable area remains unutilized as fallow every year' [5, p. 18].

Table 37 illustrates the *IWP*'s main proposals for intensifying agricultural production. Although the projections of the *IWP* indicate that the area of arable land should indeed increase (by 0.7 per cent per annum in LDCs), the fact that the area of land under cultivation is increasing much more slowly than either the population as a whole or the agricultural population means that there will be less surface area available per inhabitant and per agricultural worker. By 1985 there will be approximately one-third of a hectare of arable land available per head of the population as a whole and half a hectare per head of the agricultural population. More intensive use of land will be achieved mainly by intensifying production systems (reduction of fallow land and increase in the number of crops harvested per year), particularly intensive cultivation in Asia, improved management of water resources (flood control, drainage, extension of irrigation systems), increasing sector purchases by agriculture (fertilizers, pesticides, animal feedingstuffs) and economically justified mechanization.

Column 8 of Table 37 shows intensification of agriculture as accounting for 48 per cent of expected growth. The introduction of more intensive farming methods is likely to be of crucial importance in Asia and the Far East, which will have the smallest area of arable land per inhabitant (approximately 0.2 hectares).

**191 Adjustment of the structure of agricultural production to the structure of demand for food.** As we have seen, demand for food is increasing at a rate of 3.9 per cent per annum but rates of growth in demand for the different categories of product vary: 3.1 per cent for cereals, 5.6 per cent for meat, fish and eggs [5, p. 7]. Agriculture must therefore adjust its production to the structural changes in demand for food. The supply of proteins should be increased more rapidly than has been the case up to now [5, p. 10].

The *IWP* makes two particularly interesting points: the need for a breakthrough in cereal production and reduction of the protein deficit.

During the last decade cereals production in LDCs, and more particularly in Asia and the Near East, has not kept pace with over-all production or with incomes. The resulting cereals deficit has made it necessary to increase imports of grain, particularly from the United States, sometimes on very advantageous terms. If production were to progress at the same rate as in the past, increased demand would have to be met by considerably extending the area under cultivation, which would mean cutting back other types of plant and animal production or increasing imports. From the base year to 1985 the deficit would then increase tenfold in Asia and fivefold in the Near East and North Africa. Although projections have shown that developed countries could in fact meet the LDCs' demand for cereals, such imports would be an intolerable financial burden, upsetting the balance of payments and arresting the process of development [5, p. 9]. Other factors can be quoted to illustrate the need for a breakthrough in cereals production: the importance of cereals in the diet of LDCs where they are the main source of calories and proteins, the importance of cereals as a crop and the repercussions of improving cereal yields on land use, the need to produce more grain than is needed for human consumption in order to improve the supply of animal feedingstuffs, etc.

FAO has high hopes of new, high-yielding varieties of cereals, which are more suitable for use on well-prepared and enriched soils but which therefore call for preliminary land melioration measures [5, p. 26–31].

Elimination of the protein deficit is justified on nutritional, public health and social grounds. The protein deficit is a basic aspect of malnutrition which may cause disease and even have a lasting effect on the mental health of children.

Pulses, which usually have a low yield, are the main source of vegetable protein and animal protein is supplied in the main by meat and milk from ruminants, stocks of which take some time to build up.

Although preference is given to proteins of animal origin for both dietetic and psychological reasons the *IWP* considers that in the present situation protein supplies from all sources should be increased [5, p. 10].

Particularly strenuous efforts must be made to improve animal production. During the decade 1975–85 the rate of growth in this sector should be 'over double that of the recent past to reach parity with demand in terms of growth rates by 1985' [5, p. 10].

But it is likely that demand will not be fully met at constant prices and that there might even be a general shortage of beef and veal [5, p. 11]. The situation in LDCs could be improved if they were able to speed up production of pig meat and poultry meat, which depend to some extent on production of cereals. It is, however, unlikely that inequalities in the distribution of animal proteins among rich and poor nations and among the different social groups within each nation will be reduced. In these circumstances the *IWP* recommends measures to protect children and nursing mothers [5, p. 41].

**192 Assessment of the *IWP*** 'The *IWP* is both an attempt to look into the future by means of projections, and to influence it by proposing specific objectives for the agricultural sector together with recommendations' [5, p. 57].

The plan's basic recommendations are:

Breakthrough in cereal production.

Reduction of the protein deficit.

Improvement of foreign currency reserves by encouraging trade between LDCs, exporting processed products, adjustment of production to international outlets (beef, tropical forest products), import substitution on economically favourable terms [5, p. 47–50].

Creation of new jobs in the agricultural sector.

More intensive use of land in order both to achieve production aims and to solve the unemployment problem.

Although we have given a rough outline of the *IWP*, readers who wish to study the subject in more depth would be well advised to read the whole document, as it is the only one of its kind available and contains invaluable basic information. Some criticisms and reservations have, however, been expressed regarding the *IWP*, the more important of which would seem to be as follows:

1. The *IWP* bases its calculations in the main on the market economy and at times appears to neglect other paths to development.
2. Over-all development is based on the relationship between agriculture and industry, which does not seem to have been analysed in sufficient detail. Of course it is not FAO's job to prepare a comprehensive indicative world plan, but it is none the less true that agricultural development can only be seen as part of a whole. The problem of agriculture is unlikely to be solved if industrial growth is not accelerated.
3. The *IWP* draws particular attention to the increase of the agricultural population, but the problem of increasing jobs in the agricultural sector does not seem to have been completely solved. Even if intensification of production, the right choice of production and techniques and integrated development programmes do help to provide more jobs in agriculture, the expansion of commercial farming is very unlikely to be able to solve the problem of employment completely. There are therefore two alternatives: to accelerate industrial growth or to organize subsistence agriculture. The increase in the rural population is likely to make subsistence agriculture more important. This should be recognized and the corresponding measures devised to improve the lot of the rural population.
4. There are still many reservations regarding agriculture's contribution to the process of over-all development via the international market, and these have been strengthened by recent developments.
5. For the objectives of the indicative plan to be achieved large-scale investment, particularly in irrigation, would be necessary. Current expenditure would also increase considerably (fertilizers, pesticides, animal feedingstuffs, etc.), and it is still not clear how increased industrial growth can be financed without neglecting agriculture.
6. The *IWP* classifies as 'incentives connected with the objectives of the plan' a number of measures involving distribution, credit, land reform and the training of qualified staff. In many countries, rather than 'incentives' these might well be preconditions without which the future envisaged by the *IWP* may never come to pass.

## *Participation and field operations in agriculture* [1]

**193 Over-all plans and action in the field.** Although the *IWP* is an extremely useful work it is only a reference document. National plans, whether or not they are based on the *IWP*, must be more delicately adjusted for practical application. In the last resort, however, the success of a plan depends on the involvement of the rural population itself in the work done in the field, by which we mean development operations such as the introduction of new plant varieties, new methods of cultivation, the use of irrigation and of fertilizers, etc. within a specific area. Implementation of such measures will require the assistance of qualified staff in greater or lesser numbers and the introduction of various incentives which might include price guarantees, subsidies and other inducements.

In the launching stage the increase in the number of agricultural workers concerned, in the area cultivated, the amount harvested, etc. can serve as pointers to 'apparent' involvement of the rural population.

But real involvement implies that new techniques, new instruments of production and new forms of organization will continue to be used when these support operations and material incentives cease. Many examples can be given of reversion to the *status quo ante* once launching operations are over, with the difference that the rural population are now very wary of any attempt at innovation. Fortunately there have also been successes, such as the adoption of high-yielding varieties in certain areas, as already mentioned.

There are many reasons for this 'apparent' involvement. The most deplorable is the use of force (applied in more or less subtle ways). But apparent involvement can also result if promises are not kept, if results fall below expectations, if the various advantages are seen to be short-lived, etc., or if artificially inflated or otherwise meaningless statistics are used. This type of failure, which is only too common in LDCs, jeopardizes public acceptance of official proposals and undermines the credibility and effectiveness of future development operations.

There must be a possibility of success, both at an economic and a technical level, if the support of the rural population is to be gained. For example, before instruction in the use of fertilizers it is often necessary to teach the technique of sowing in straight lines, which makes weeding a much less time-consuming operation. A logical time-sequence must be observed in agricultural extension activities, otherwise technical improvement plans may be placed in jeopardy.

Economic success means that the monetary income per agricultural worker increases, improving his purchasing power and enabling the standard of living to be raised and the process of modernization to be continued.

In fact, experience has shown that the effect of new techniques on the monetary income of agricultural workers has not in general been studied in sufficient detail. Sometimes the suggestions made inevitably involve the agricultural worker in debt; it is therefore absolutely essential to build up machinery to study the effect of new techniques on the agricultural worker's monetary income.

Finally, if the involvement of the agricultural worker is to be real, he and his problems must be understood, his dignity respected and his motives identified. The experience and the flexibility of the rural population are often underestimated by officials brought up in an urban environment and crammed with abstract knowledge, who have little or no gift for sizing up practical situations and, even worse, tend to be too conscious of their superiority and condescending in their attitude towards the rural population. As a basic rule it is difficult to persuade a man to change his ways without first making an effort to understand him and above all without deep-seated respect for his personality.

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[1] This section was written in collaboration with J. Pautard.

Those responsible for development can put forward beautifully coherent and logical statements of their point of view but country folk often reason in a different way. For example in LDCs it is difficult to introduce a type of production which is profitable from the general economic point of view if the agricultural worker's own family is not assured of adequate food. In many parts of the world this means that subsistence production of rice is a precondition for the development of any other kind of production. Priority should therefore be given to rice in all areas suitable for this crop. Once the agricultural worker is satisfied that his rice harvest will be sufficient to assure his own family's survival it will be possible to persuade him to support other projects.

Finally real involvement means the involvement of the social group and not of a few individuals. In LDCs individual actions are governed to a large extent by the social group. Those responsible for development must therefore be familiar with local customs. The real leaders of the group may not always be the same as the 'official' leaders, who are the local representatives of external services. The failure of pilot farms, show farms, etc. can often be attributed to the wrong choice of individual. Moreover if the group has not given its support to the project any agricultural worker chosen to take part in it risks being branded as a social deviant. Rural community workers come into their own here, in so far as they are able to identify the genuine representatives of the group.

Finally the proposals made should not run counter to local traditions or religious beliefs unless the underlying reasons are very clearly explained, but even then it will often be an uphill struggle.

**194 The framework for field operations.** Another important preliminary is the definition of the operational area in which one or more field operations will be carried out. This area is sometimes determined by technical, geographic or ethnic considerations. For example water storage capacity or the type of dam which has been built will determine the irrigable area. A small natural region, sometimes very clearly defined, may also constitute a framework for operations. Since the process of development must be envisaged as a relationship between agriculture and industry, it may be advisable for the operational area not to be a specifically agricultural one but an area within which industrialization can take place and agricultural workers to which can be transferred at the same time as agricultural production is increased. The plan for agricultural development will then be linked with the regional development plan, which seems the most realistic approach to the problems of agricultural development.

For example the government may be led to designate growth areas, centred round an industrial 'growth pole' made up either of non-agricultural industries with an indirect effect on agricultural development or of agricultural and food industries affecting it directly.

'Settlement areas' are a special problem when trying to determine a framework for operations. Land settlement usually means settling families on land made available for farming by clearance, drainage or other types of land reclamation, by the splitting-up of large properties or by redistribution of land following war, revolution, confiscation, etc.

A policy of land settlement necessarily involves movement of the rural population which can vary in scale as regards the numbers and distances involved. A policy of population transfer may also be deemed necessary when, as frequently occurs in LDCs, the distribution of population is not well-balanced. Contrary to the classical economic theory, the most fertile land is not necessarily cultivated first (and in any case fertility denotes different things at different times) and it is not uncommon in LDCs for relatively poor soils to be too heavily populated while potentially fertile land is underpopulated.

Land settlement and the accompanying population movement may occur spontaneously or form part of an over-all development plan. The present trend in countries where such a policy is possible is for a process of organized land settlement. This raises many problems, such as the identification of migrants, their transfer and training, the establishment of viable settlement services, etc., which cannot be dealt with here in the detail which they deserve.

The problem most frequently encountered is that of introducing changes in an area where the population has been stable for some time and has formed a socio-economic structure of its own within which any action to bring about the social and technological changes must operate.

In this context the first essential is to identify the group's decision-making centres. It would be a mistake to define these centres in terms of families or agricultural production units, for the family is usually of the extended type and relationships within the family differ according to local customs, while the concept of an agricultural holding is often very vague, based on a family unit with varying membership, made up of plots which are often not clearly defined and not held on any permanent basis, etc.

Another question which arises when determining the operational area is whether the action taken should be concentrated or spread over the whole area. In view of the limited capital resources and short supply of qualified technicians, etc., it is usually necessary in LDCs to concentrate on a few carefully chosen areas.

Political realism and a desire for social justice may militate in favour of spreading operations over the whole territory, but such dispersal of effort may mean that resources are so thinly spread and action so watered down that effectiveness will be reduced to near zero.

It may well be that some field operations have to be spread over the whole territory in order to avoid discrimination almost certain to result in serious social unrest; this would be true of measures relating to such basic necessities as food, education, health and accommodation. On the other hand the concentration of certain types of measures in particular areas may be justified by the need to maximize growth, which initially means giving priority to areas in which the margin for growth of the value added per hectare or per worker is greatest. Such geographical concentration will make it possible to build up effective institutions, to reach levels of achievement at which progress becomes self-sustaining and multiplying and to train the field experts whom the LDCs need to be able gradually to extend their operations to other areas. In the intervening period, which may vary in length, careful attention will, however, have to be paid to the resulting geographical imbalances and to the social tensions to which these may give rise.

## Check test

| Statements | True | False | Don't know | Subsection |
|---|---|---|---|---|
| 1. Productivity of labour is a scientifically acceptable concept. | | | | 147 |
| 2. When land is very productive labour is also very productive. | | | | 149 |
| 3. Technical progress is measured by the increase in the productivity of labour. | | | | 152 |
| 4. Economic progress is measured by the decrease in real prices. | | | | 153 |
| 5. Experimentation in agriculture is part of the research stage. | | | | 155 |
| 6. The Green Revolution necessitates technological changes only. | | | | 159 |
| 7. For the purposes of development, the success of land reforms must be assessed by their effect on the surplus and the distribution of the monetary return on the surplus. | | | | 163 |
| 8. Socio-economic forms of organization in agriculture depend basically on agro-economic factors. | | | | 168 |
| 9. Agricultural co-operatives in LDCs are semi-co-operatives. | | | | 171 |
| 10. Primary education must be adapted to the rural environment if the flight from the land is to be prevented. | | | | 173 |
| 11. Agricultural prices in LDCs are to a large extent determined by production costs. | | | | 175 |
| 12. Under the system of State capitalism the workers own the means of production. | | | | 182 |
| 13. Planning is incompatible with a market economy. | | | | 183 |

## Revision exercises

24. If capital increases at a rate of 4 per cent per annum and capital efficiency at a rate of 1 per cent calculate the components of growth.
25. The income from labour represents 70 per cent of the national income and income from capital 30 per cent. Write a Cobb-Douglas-type function which describes this situation.
26. If economic growth has progressed at a rate of 5 per cent and employment and capital have grown at rates of 2 per cent and 3 per cent respectively, calculate technical progress, if the production function is $Y = L^{0.8}K^{0.2}$.
27. Subsistence production represents 40 per cent of total production. The agricultural population is assumed to be increasing at a rate of 3 per cent. The income of non-agricultural workers is rising at a rate of 1 per cent and the elasticity of demand for food in relation to income is 0.8. Calculate the increase in total demand for food. (Assume that the agricultural sector is a purely subsistence sector in which *per capita* consumption remains constant.)

## Topics for group discussion

1. Discuss the land reforms which you consider necessary (in an area of your choice) in order to give the rural population an incentive for development. Would such reforms make it possible to increase the surplus?
2. Discuss the reforms of production structures needed to adapt the socio-economic organization of agriculture to development.
3. What other reforms should, in your view, go hand in hand with land reforms and reforms of production structures?
4. Classify and describe the agricultural co-operatives found in a given area. What would have to be done to increase their effectiveness?
5. What are the main difficulties in agricultural planning? What do you suggest to make it more effective?
6. Organize a series of discussions on the *IWP* (get a copy of the *Summary*).
7. What is needed in order to bring farmers to accept development plans?
8. Visit a field-operations area and discuss what you have seen.

# 4

# *The relative decline and transformation of agriculture*

**195 Integration of agriculture with the development process.** In the earlier chapters of Part II, we looked successively at the different types of contribution which agriculture may make to growth, at the role this sector plays in bringing development about and at the strategy of agricultural development. In the present chapter, we shall attempt to portray, in broad outline, the evolution of the relationship between agriculture and over-all development, as development proceeds and the economy moves into the age of mass consumption. Here, we can refer only to the developed countries, and we shall confine ourselves to the Western model, subject to reverting to the matter more fully in a future publication more specifically devoted to the developed countries.

The 'historical model' for the transformation of Western agriculture is obviously of no significance outside the historical framework of social and economic transformation in the West. And since Western growth has been specifically capitalist, the transformations of Western agriculture find their explanation in the market mechanisms and special relationships which may be established between a craft-based agriculture and a generally capitalist economy.

In the present chapter, we shall limit ourselves to a description of the main trends observed during the period 1850–1950. Although similar trends could be noted in other social and economic systems (in the U.S.S.R., for example), notwithstanding differences in the economic mechanisms of transfer (planned transfers), we shall concentrate our attention in the present study on the Western economy.

After a fleeting glance at the historical models of Western development, we shall examine different stages of agricultural development, and then the main trends in regard to the evolution of agriculture.

## Historical models of Western development

### *A three-sector model; the primary, secondary and tertiary sectors*

**196 Distribution of the working population.** The activities of a nation are very varied. In order to facilitate the representation of its economy, it is customary to group these activities into 'branches' or 'sectors'. A table showing resources and uses for each sector constitutes an essential ingredient in the structural representation of the economy. Models can be devised which contain either a large or small number of suitably chosen sectors. Thus, in the methodological introduction to Part II, we envisaged a model with four sectors: agriculture, agricultural and food industries, other industries, and services.

TABLE 39. Model I: model with three sectors (in this model P = agriculture, forestry, fisheries): distribution of working population and type of economy (percentage)

| Period | Sector | | | Type of economy |
|---|---|---|---|---|
| | P | S | T | |
| I | 80 | 10 | 10 | Primary |
| II | 50 | 30 | 20 | Primary/Secondary |
| III(*a*) | 20 | 35 | 45 | Secondary/Tertiary |
| III(*b*) | 10 | 30 | 60 | |
| IV | 5 | 15 | 80 | Tertiary |

*Note.* Types I-III are historical, i.e. the figures have been verified in one country or another; the figures for type IV are estimates.

The table shows that as development progresses, there is a relative decline in the primary population and growth followed by a relative decline in the secondary population, while the tertiary population keeps on growing.

Each stage in the process of structural change may be characterized by the predominance of one or two sectors.

This model shows the transition from primary society to tertiary society through the transformations which occur during a transitional period fundamentally characterized by the development of the secondary.

TABLE 40. Distribution of the working population in the United Kingdom, the United States and France (percentages)

| Period | Country | Primary | Secondary | Tertiary |
|---|---|---|---|---|
| 1900 | United Kingdom | 10 | 47 | 44 |
| | United States | 38 | 28 | 34 |
| | France | 42 | 30 | 28 |
| 1950 | United Kingdom | 5 | 49 | 46 |
| | United States | 12 | 35 | 53 |
| | France | 33 | 32 | 35 |

Colin Clark [1] chooses to classify economic activities in three sectors: primary (agriculture, forestry, fisheries, mining), secondary (processing industries) and tertiary (transport and services). Amassing a considerable quantity of statistics, he developed the so-called 'three sector' theory, which describes changes in the distribution of the working population in relation to the process of development. As a general rule, the primary population is in a state of relative decline, the secondary population increases to a maximum and then declines, while the tertiary population is continually expanding. The predominance of a given category of population 'characterizes' the period or stage of development.

The above trends are resumed in Table 39.

In the historical process of Western development, period I is characteristic of the eighteenth century, period II of the second half of the nineteenth century, and period III of the mid-twentieth century.

There are, however, historical discrepancies between individual countries: in Europe, the United Kingdom, which was the first industrialized nation, was the first in which the distribution of activities underwent a transformation as may be seen in Table 40.

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[1] Colin Clark, *The Conditions of Economic Progress*, 3rd ed., London, Macmillan, 1957, 720 p.

By about 1900, the primary population no longer accounted for more than 10 per cent of the total population in the United Kingdom, whilst it was still of the order of 40 per cent in the United States and France. This 'lead' of the United Kingdom is explained by the fact that its development had begun earlier, by the speed at which industrialization took place, and by its decision, as a matter of policy, to give preference to industrial development and the import of foodstuffs.

**197 An interpretation of the facts.** Colin Clark[1] and J. Fourastié[2] have explained the facts in detail. A condensed interpretation may be proposed in the form of a model[3].

Let us suppose:

$np, ns, nt$ = proportion of workers in each sector of the economy;
N = total number of workers in the economy as a whole (the number of workers in any given sector being $N_i = Nn_i$);
Wp, Ws, Wt = productivity of labour in each sector;
Yp, Ys, Yt = production in each sector;
P = total population;
$cp, cs, ct$ = *per capita* consumption of the products of each sector;
Cp, Cs, Ct = total consumption of the products of each sector.

Assuming balanced growth, we can write for any given sector:

$$\text{Production} = \text{Consumption}$$

$$NiWi = P \times C_i$$

$$(n_i N_i)\, W_i = P \times C_i$$

$$n_i = \frac{P \times C_i}{N \times W_i}$$

i.e. for each sector:

$$np = \frac{P \times cp}{N \times Wp}$$

$$ns = \frac{P \times cs}{N \times Ws}$$

$$nt = \frac{P \times ct}{N \times Wt}.$$

Noting that P/N is a constant, we may deduce from the above equations that the distribution of the working population depends on the *per capita* consumption of the products of each sector and on the productivity of labour in each sector.[4]

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[1] ibid.

[2] J. Fourastié, *Le Grand Espoir du XX$^e$ Siècle*, Paris, Gallimard, 1963, 372 p.

[3] This model was constructed with the participation of M. Bourdon.

[4] The distribution of the total population resembles that of the working population to the extent that in each sector the non-productive element of the population remains proportionally the same:

$$P_i = N_i + N_i di = N_i(1 + di)$$

where $di$ = coefficient of non-productive population.

Any changes in the relative distribution of the working population which occur during the process of development will thus depend on changes in consumption and productivity in each sector.

Assuming balanced growth, we can write for any given sector:

$$r_{Yi} = r_{Ci}$$

$$r_{Ni} + r_{Wi} = r_P + r_{Ci}$$

($r_P$ = growth in total population)

$$r_{Ni} = r_P + r_{Ci} - r_{Wi}$$

$$r_{Ni} = r_P + \lambda_i r_r - r_{Wi}$$

($\lambda_i$ = flexibility of demand in relation to income
$r_r$ = *per capita* income growth),

i.e. for each sector:

$$r_{NP} = r_P + \lambda^p r_r - r_{W_p}$$

$$r\mathrm{NS} = r_P + \lambda^s r_r - r_{W_s}$$

$$r_{Nt} = r_P + \lambda^t r_r - r_{W_t} .$$

Observing that in each of the above equations $r_P$ and $r_r$ have the same value, we may deduce that employment in each sector will vary in accordance with the coefficient of elasticity which determines the growth of demand in each sector, and with the growth in the productivity of labour.

When incomes rise in line with the development process, consumer preferences undergo modification. Figure 19 shows how the elasticity of demand for foodstuffs changes in response to an increase in income in the Western countries. The relative decline of agriculture in the economy of the West is largely explained by the reduced elasticity of demand for foodstuffs in relation to the increase in *per capita* income. Conversely, the demand for industrial products and, more particularly, for services remains highly elastic.

Similarly, the rate of growth of the productivity of labour varies from sector to sector.

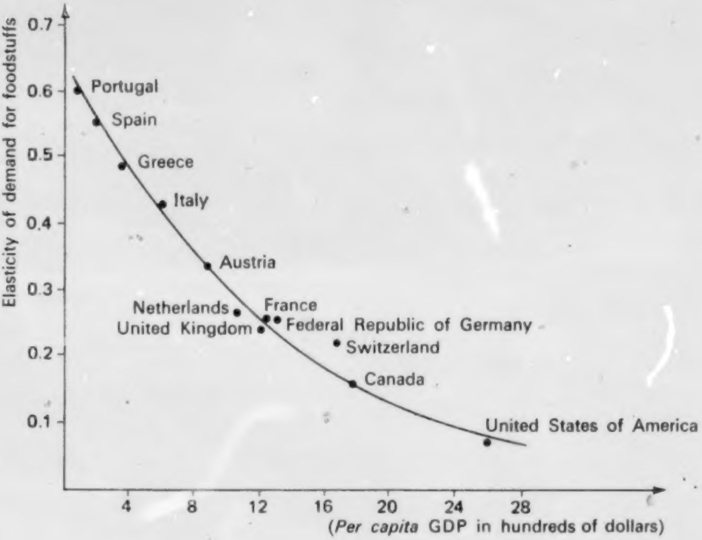
The secondary sector, which covers industrial processing activities, has made comparatively rapid progress, characterized as it is by a high degree of innovation and by considerable substitution of capital (in the form of mechanical energy and machinery) for labour, resulting in marked growth of the productivity of labour in this sector.

In the primary sector, the productivity of labour has increased at a comparatively slower rate. Innovation has been less marked, and mechanical equipment has played a less important role than in industry.

The tertiary sector (commerce, health services, ecucation, etc.) has undoubtedly made important progress, although this has had relatively little effect on the productivity of labour in this sector.

Development may also involve changes of rhythm in the growth of the productivity of labour in each sector. Thus, in the economy of the Western countries during the last ten years, the productivity of labour has risen more rapidly in agriculture than in the other sectors of the economy, with a consequent reduction of the disparity between the productivity of agricultural and of non-agricultural labour.

FIG. 19. Elasticity of demand for foodstuffs in relation to income (after OECD, *Agriculture and Economic Growth*, Table 1, p. 22; Table 16, p. 56, Paris, OECD, 1965, 124 p.) This graph is based on OECD series concerning the elasticity of demand for foodstuffs and *per capita* income. Since the OECD countries are at different stages of economic development, the graph shows how the coefficient of elasticity decreases as income increases.



Elasticity of demand and sectoral productivity are the two major variables in terms of which the relative distribution of the working population may be explained. If demand increases more rapidly than the productivity of labour, as in the case of the tertiary sector, the working population in this sector must increase.

Occupational mobility would appear to be a prerequisite of over-all balance: the volume of employment in a given sector will vary in such a way that sector production will follow consumption. In other words, the capacity of a given sector to produce must keep in line with the economic function of the sector within the economy as a whole.

The rural exodus is one of the most important outward signs of occupational mobility. If we follow the reasoning set out above, we must conclude that when the demand for foodstuffs increases more slowly than the productivity of labour, agricultural workers transfer to other sectors. However, the theory of a residual agricultural population turns this proposition on its head: the transfer of agricultural workers depends on the rates of growth of non-agricultural activities, and the productivity of labour constitutes the variable of adjustment.

The above model is a simplified one, based on a number of explicit or implicit hypotheses, and more specifically the hypotheses of balanced growth and of full employment. It may be, however, that these hypotheses do not hold good. Moreover, international trade may constitute a variable of adjustment, slowing up or accelerating the rates at which occupational transfers take place. Thus, in countries which import a large amount of foodstuffs (e.g. the United Kingdom), the agricultural population declines more and more rapidly, while in countries which export large quantities of foodstuffs (e.g. Denmark) the rate of decline is slowed down.

The theory of three sectors, historically verified by the process of Western development, is sometimes presented as universally applicable. Table 41 shows, in fact, that the distribution of the labour force depends on levels of development. Nevertheless, the hypotheses of full employment and balanced growth, and the assumption that the production capacity of the different sectors will be adapted to their economic function, restrict the scope of this theory. In the LDCs, unemployment is often concealed within the primary sector, while the tertiary sector is often inflated by the fact that employment and income are distributed by the public authorities or by the large number of private servants, etc. made possible by low salaries.

Furthermore, owing to the heterogeneity of the sectors, it is difficult to make temporal comparisons for a single category of countries and spatial comparisons between developed and developing countries. In the eighteenth-century European economy, country-dwellers engaged in diverse activities—primary (agriculture), secondary (manufacture of tools) and tertiary (transport). As development took place, activities became more specialized, although in many countries agricultural families continued to exercise a variety of activities. For the last twenty years or so, the relative impoverishment of agriculture together with 'industrial decentralization' have brought the diversification of the activities of rural families back into the forefront of attention, and encouraged the development of part-time agriculture.

TABLE 41. Percentage distribution of the world labour force by main branches of activity and by groups of countries (1960)

| | Agriculture | Industry | Services |
|---|---|---|---|
| World | 58.2 | 18.9 | 22.9 |
| *Total, developed countries* | *30.5* | *33.5* | *36.0* |
| Europe | 31.8 | 36.4 | 31.8 |
| of which EEC | 20.5 | 42.4 | 37.1 |
| U.S.S.R. | 43.8 | 27.6 | 28.6 |
| North America | 7.3 | 36.3 | 56.4 |
| Japan | 32.6 | 29.8 | 37.6 |
| *Total, developing countries* | *73.1* | *11.3* | *15.6* |
| Latin America | 50.0 | 20.0 | 30.0 |
| South-East Asia | 73.1 | 10.5 | 16.4 |
| North Africa | 69.6 | 10.4 | 20.0 |
| Others | 77.3 | 10.4 | 12.3 |

*Source:* Bairoch and Limbor, 'Changes in the Industrial Distribution of the World Labour Force, by Region, 1880–1960, *International Labour Review* (ILO), October 1968, p. 326–7.

*Note.* In 1960, more than half the world's population of working age was engaged in agriculture. In proportional terms, however, there were 2.5 times fewer agricultural workers in the developed countries than in the LDCs. The proportion working in industry was three times higher in the developed countries than in the developing countries while the proportion working in the services sector was only 2.5 times higher, as the result of a relative 'inflation of the tertiary sector' in the LDCs. In North America, the proportion engaged in agriculture is less than one-tenth what it is in the LDCs. Of the latter, Latin America has the lowest proportion of peasants, and twice as many industrial workers.

In the LDCs it is difficult to classify the working population by sectors, specifically because of the diversification of its activities. The 'agricultural' population may, in fact, also be engaged in activities belonging to the secondary or tertiary sectors.

### *A two-sector model: agriculture and industry*

**198 Agriculture and industrialization.** If we assume that the primary sector comprises agriculture and that the secondary and tertiary sectors constitute industry (*lato sensu*), we may pass from a three-sector model to a two-sector model. The latter is deficient in comparison with the former, and the expression 'industrial sector' is unsuitable since, as we have seen, there comes a moment in the development process when tertiary activity surpasses secondary activity in importance. Nevertheless, the expression 'industrial society' is consecrated by use, while we may note with many authors that the tertiary society derives from the industrialization which is the foundation-stone of Western development.

The model in Table 42 is directly related to that contained in Table 39, but also shows a sector-by-sector breakdown of GDP.

Examining this model, we may distinguish three fundamental types of economy:

1. An economy in which the agricultural population is dominant (80 per cent of total population), as is the GDPA (66 per cent of GDP); such was the case in eighteenth-century Europe, and still is the case in the majority of the underdeveloped countries; this may be termed an agricultural or pre-industrial economy.
2. An economy in which non-agricultural employment catches up with and then overtakes agricultural employment, and in which the GDPI tends to become clearly predominant: here, the industrial sector is of increasing importance, and we may speak of an economy in the process of industrialization; a great number of the rich countries had reached this stage by the end of the last century.

TABLE 42. Model II: model with two sectors: distribution of working population and GDP and type of economy

| | Distribution of working population | | Distribution of GDP | | |
|---|---|---|---|---|---|
| Period | Agricultural | Non-agricultural or industrial | GDPA | GDPI | Type of economy |
| (1) | (2) | (3) | (4) | (5) | (6) |
| I | 80 | 20 | 66 | 33 | Agricultural or pre-industrial economy |
| II | 50 | 50 | 33 | 66 | Economy in the process of industrialization |
| III(*a*) | 20 | 80 | 11 | 88 | Industrialized economy |
| III(*b*) | 10 | 90 | 8 | 92 | |
| IV | 5 | 95 | 5 | 95 | Post-industrial economy |

*Note.* Model II is a direct consequence of model I: working industrial population = working secondary and tertiary population. The distribution of GDP has been calculated on the assumption that the productivity of agricultural labour is equivalent to 50 per cent of that of non-agricultural labour for periods I, II and III (a). For period III (b) we have assumed, in accordance with recent trends, that the productivity of agricultural labour is nearing that of industry (0.8), and that in the post-industrial period it equals it.

3. An economy in which the industrial population has become overwhelmingly dominant (80–90 per cent of the total population), as is the case today in all the countries of Western Europe and North America, where the GDPI may account for 90 per cent or more of the GDP: this may be called an industrial or industrialized economy.

This model shows the relative growth of industry and the relative decline of agriculture.

**199 The process of industrialization.** Far more than a merely technical phenomenon, industrialization is the instrument of over-all social and economic change. R. Aron has written [1] that 'industrialization is the transformation of social and economic structures under the influence of the industrial lever'.

The process of industrialization may be analysed as a process of change which takes three simultaneous forms: (a) the generalization throughout the economy, of the methods of production and mental attitudes which develop during the period of industrialization in the advanced sectors of the economy; (b) the transformation of the economic structure under the combined effect of the rates of growth of production and of productivity in each sector of activity; (c) over-all social and economic change.

The industrial process of production would appear to have six basic and characteristic features:

1. Inventiveness and the spirit of innovation. Industrialization is the product of inventiveness and is propagated through innovation.
2. Intensive use of mechanical energy and technical capital. Industrialization is characterized by the substitution of mechanical for biological energy, and by the diversification of the sources of mechanical energy. The process also includes the substitution of technical capital for labour, together with growth of the former and an increased amount of mechanical energy per worker.
3. Rational planning. This becomes necessary in order both to maximize growth by ensuring that the best possible use is made of scarce resources and to select industrial techniques and forms of organization.
4. The scientific division of labour and, in particular the technical splitting-up of the production process and the specialization of workers.
5. Mass production, i.e. the production of large numbers of standardized goods.
6. High productivity of labour, as the combined effect of inventions, rational selection, a high level of capital investment, the division of labour and large-scale production.

This industrial mode of production tends to spread to the whole of the economy as development proceeds. Methods, structures and patterns of behaviour which begin to emerge in the industries forming the vanguard of the economy tend gradually to permeate the rest of the economy over a shorter or longer period of time which corresponds, in W. W. Rostow's analysis, to the 'march towards maturity'.

In fact this 'march' never ends, for man's creativity leads him on continually to invent new methods, but as time goes on the traditional sectors tend to adopt new methods more quickly.

During the process of development in the West, invention and particularly innovation, which is the practical application of invention, were more characteristic of industry than of agriculture, which remained essentially traditional in its outlook. This difference in outlook is one aspect of the social tensions which result when development takes place in a dualist society embracing both agriculture and industry.

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[1] R. Aron, *Dix-huit Leçons sur la Société Industrielle*, Paris, Gallimard, 1962, 375 p.

But after a certain period of time agriculture itself begins to adopt the behaviour patterns, methods and structures of the industrial economy; it tends to become industrialized itself.

The structure of the industrial production apparatus changes under the combined effect of growth rates in the different sectors, factor of productivities and economies of scale.

The different branches of the economy do not develop at the same rate; development does not take place everywhere at once: it occurs in privileged sectors which play a leading or key role in the process of development.

These 'leading' industries are historical and geographical categories. Thus the textile and iron and steel industries played a key role in the economic growth of Britain and France, as did textiles and the railways in the United States, furs in Canada, wood in Sweden, railways in Germany, etc. In the twentieth century the automobile industry has played a similar role in most Western countries (automobile-ownership figures then become an indicator of development).

These industries are characterized by high growth rates and carry along other sectors in their wake, transforming industrial-production structures throughout the economy.

Following F. Perroux, we can also say that 'leading' industries lower prices and costs of goods and services, increase existing trade flows and introduce new ones, as well as modifying behaviour patterns and the structures of both production and consumption.

Growth based on industrialization gradually reshapes the whole production mechanism, at a rate determined mainly by the 'leading' industries, which also determine inter-sectoral and inter-regional transfers of manpower and resources. 'Growth with stability' is a myth: without change there is no development.

The characteristics of the industrial process of production are to some extent independent of the socio-economic context: the six characteristics which we have singled out can be identified in capitalist, socialist and other systems: under each of these systems the industrial mode of production tends to spread to the rest of the economy (though they may not all necessarily have the same ability to influence the pace of industrialization).

On the other hand, the growth of productive forces, as development proceeds, has many and varied effects on the socio-economic structure as a whole. In Europe, obviously, the spread of industrialization meant the spread of capitalism (the development of new types of activity, replacement of semi-feudal and craft types of organization by capitalist production structures).

The basic socio-economic changes associated with the process of industrialization in the West could be summarized as follows:

1. The economic and geographical expansion of capitalism (the triumph of industrial capitalism).
2. New production relations: the family relationships of the craft economy are replaced by the relationship between owners of means of production and those who possess only the capacity to work; hence the dismemberment of the family as a production unit.
3. Urbanization and new dispositions in regard to the uses of space.
4. New standards and styles of living.

TABLE 43. Changes in GDPA as a percentage of GDPT (at current prices)

| Country | 1950–51 | 1961–62 | 1967 |
|---|---|---|---|
| United Kingdom | 5.9 | 4 | 3.3 |
| United States | 7.4 | 4.3 | 3 |
| Sweden | 7.6 | 4.8 | 5.9 |
| Germany (Federal Republic) | 10.4 | 5.5 | 4.1 |
| France | 14 | 9 | 7.4 |

*Source:* OECD, *Agriculture and Economic Growth*, p. 32, Paris, OECD, 1965, 124 p.

**200 The relative decline of agriculture.** This can be illustrated by the decrease in the proportion of the working population engaged in agriculture and in agriculture's contribution to the GDP. It should be noted that agricultural production as a proportion of GDP is always smaller than agricultural population as a proportion of total population. This is one result of the low productivity of agriculture which is an almost world-wide phenomenon, there being very few exceptions to the rule. Only over the last twenty years, in the most developed countries, has productivity in the agricultural sector begun to increase more rapidly than in other sectors of activity: there is therefore a tendency for the productivity gap to become less marked, without however disappearing completely. But it does not seem unreasonable to forecast that when the post-industrial stage is reached productivity in agriculture will equal that of the other sectors.

In the historical context of Western development, which was based on industrialization, the non-agricultural sectors developed faster than the agricultural sector, which accordingly fell into a relative decline. Thus the over-all rate of growth was one of the order of 2–3 per cent while that of the agricultural sector was 1–1.5 per cent.

An explanation for the relative decline of agriculture has already been sought in the description of the theory of the three sectors. This decline, measured in terms of the relative importance of GDPA as a proportion of GDPT, has continued in recent years, even in the developed countries where the relative importance of GDPA was already very low (Table 43).

### *The transformation of the economy of the food and agricultural sector*

**201 The industrialization of the food production economy.** The agricultural and food sector of the economy is made up of all enterprises which take part in the production of agricultural and food commodities. The structure of this sector of the economy is characterized by the distribution of expenditure on food ($e$) between the subsector from which agriculture purchases its production requisites (backwards linkage) ($p$), the agricultural subsector itself ($v$) and the subsector which processes and distributes agricultural and food products (forwards linkage) ($c$): $e = p + v + c$.

The relative importance of the components or structural coefficients for this sector have already been analysed for DCs and LDCs.

Table 44 shows that as development proceeds changes occur in the structure of the agricultural and food sector. Sector purchases by agriculture tend to increase as does the cost of processing and distribution, while the relative importance of agriculture itself declines. The relative importance of agriculture

TABLE 44. Model III: basic characteristics of the economy of the food-production sector

| Period | Distribution of expenditure of food (percentage)[1] | | | | Type of food-production economy |
|---|---|---|---|---|---|
| | $p$ | $c$ | $v$ | $e$ | |
| I | 3 | 22 | 75 | 100 | Subsistence food production |
| II | 10 | 40 | 50 | 100 | 'Craft-based' food production increasingly oriented to the market |
| III | 17 | 51 | 32 | 100 | Increasing industrialization and reliance on capital-intensive techniques |

1. $e$ = consumer expenditure on food; $p$ = agricultural purchases from other sectors of the economy; $c$ = cost of the processing and distribution of agricultural and food products; $v$ = value added by agriculture.

*Source:* L. Malassis and D. Bourdon, 'Un Modèle Simple de Développement Agricole Intégré', *Économie et Sociétés* p. 361 et seq., Paris, ISEA, 1970.

*Note.* The above model shows the relative decline of agriculture (its importance being measured by the value added, $v$, expressed as a percentage of expenditure on food) and the relative increase in the importance of the subsectors which supply the food sector with its production requisites or which process and distribute its output (backwards and forwards linkage). Comparison of the way in which the subsectors develop will make it possible to analyse the way in which food-production economy as a whole changes and to define successive situations or stages in this process: when development begins, it is basically agricultural; then, as development proceeds, it comes to incorporate more and more secondary and tertiary activities.

declines not only within the economy as a whole, but also within the food-production economy.

During period I, which corresponds in Western Europe to the end of the eighteenth century and the beginning of the nineteenth, the food production economy is basically an agricultural economy: the value added by agriculture represents 75 per cent of 'expenditure on food'. This situation can be explained by the prevalence of subsistence agriculture (no distribution costs) and by the consumption of 'natural' foodstuffs.

By period III, towards the middle of the twentieth century, the cost of processing and distribution has come to represent more than half the total expenditure on food. The food-production economy is no longer an 'agricultural economy': the value added by agriculture may fall to below one-third the expenditure on food. In the United States towards 1970 the cost of processing and distribution represented more than 65 per cent of expenditure on food and the contribution of agriculture was probably of the order of 20 per cent.

This trend can be explained by the smaller proportion consumed by the producer and his family, the growth in the urban population and above all the new approach to foodstuffs in general. Whereas the nineteenth-century farmer brought a finished product to market, the farmer of the mid-twentieth century provides a raw material, the appearance and content of which will be altered by processing. As life styles change[1] and food technology becomes more sophisticated, the so-called 'convenience' foods come to occupy an increasingly important place in family budgets.

Structural changes in the food production sector are therefore linked with technological progress, changing ways of life and the industrialization of the sectors which supply the food industry with its production requisites or process and distribute its products. These changes are also linked with the transformation of the socio-economic organization of society. Sectors which industrialize rapidly (agricultural suppliers and the food processing and distribution industries) begin to invest heavily and to concentrate their activities. This may lead to serious imbalances and place the agricultural subsector in danger of domination.

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[1] The changing role of women in society and the reduced number of domestic servants, increasing use of automobiles, refrigerators, deep-freezers, etc.

For certain sub-branches of agricultural production which have reached the industrial stage (pig farming, poultry farming, certain horticultural crops, etc.), craft-based or even semi-capitalistic forms of agriculture become integrated through the workings of industrial and commercial capitalism.

Faced with these changes, farmers endeavour to form 'counterweights' (producer groups, co-operatives, etc.).

## Stages in the development of agricultural and food industries in the West

**202 A simplified descriptive model of Western development.** The basic trends which we have described are shown in Table 45. Columns 1 to 6 show the distribution of the working population, columns 7 and 8 the systems and structures of the economy as a whole, columns 9 and 10 the systems and structures of the agricultural economy and columns 11 to 15 the food-production economy. Further discussion of the model would involve us in analysis of the historical process of development in the West, a subject which goes beyond the scope of the present study. As we have already said, the distinguishing feature of Western development is a structural transformation which takes place within the capitalist system.

The advantage of a model showing the whole of the economy is that it sets agricultural development within the context of over-all development. The stages of agricultural development can only be understood in the general socio-economic context. In an economy where 80 per cent of the population is engaged in farming it is obvious that this will be in the main subsistence farming.

In the Western model there are three basic historical stages:

1. That of subsistence agriculture on a semi-feudal and craft (family) basis within a pre-industrial economy.
2. That where craft-based agriculture becomes increasingly oriented to the market within a capitalist economy in the process of industrialization.
3. That of a market-oriented craft-based agriculture in the process of industrialization within an industrialized capitalistic economy.

Changes now taking place make it reasonable to assume that in the post-industrial society agriculture will be completely industrialized. According to W. W. Rostow's definition this will mark the end of the last stage leading up to maturity: all sectors will then be highly productive (Kuznets).

There are, however, in the Western economic setting different socio-economic models on the basis of which the industrialization of agriculture could proceed, the main possibilities currently discernible being the 'neo-craft' and co-operative model, the capitalist model and the semi-public model.

This general model seems to account fairly satisfactorily for development in Western Europe, except as regards the United Kingdom. In this country the enclosure acts of the sixteenth and seventeenth centuries, rapid industrialization

TABLE 45. Simplified descriptive model of Western development

| Century | Distribution of working population as percentage | | Number of non-agricultural workers per agricultural worker | Number of inhabitants per agricultural worker | Stages of socio-economic development | | | | | | | | Stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Over-all | | Agricultural | | Food production[1] | | | | |
| | Agricultural workers | Non-agricultural workers | | | System | Structure | System | Structure | $p$ | $v$ | $c$ | $e$ | |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 18th | 80 | 20 | 0.25 | 1.25 | Emergence of commercial capitalism on the basis of a semi-feudal and craft-based economy | Agricultural or pre-industrial economy | Semi-feudal and craft-based | Subsistence agriculture | 3 | 75 | 22 | 100 | Agricultural food-production economy |
| 19th | 50 | 50 | 1 | 2 | Industrial capitalism | Economy in process of industrialization | Craft-based, pre-industrial | Agriculture increasingly oriented to the market | 10 | 50 | 40 | 100 | Food-production economy in process of industrialization, increasing reliance on capital-intensive techniques |
| 20th 3(*a*) | 20 | 80 | 4 | 5 | | Industrialized economy | Craft-based | Market-oriented agriculture in process of industrialization | 15 | 35 | 50 | 100 | |
| 3(*b*) | 10 | 90 | 9 | 10 | | | | | 18 | 27 | 55 | 100 | |
| 20th | 5 | 95 | 19 | 20 | ? | Post-industrial economy | 'Neo-craft'?<br>Capitalist?<br>Co-operative?<br>Semi-public? | Industrialized | 20 | 20 | 60 | 100 | Industrialized food-production economy |

$p$ = purchases of production requisities; $v$ = value added by agriculture; $c$ = cost of distribution and processing; $e$ = consumer expenditure.

and the system of succession, among other factors, led to the emergence and continuing existence of large estates and a semi-capitalistic approach to farming.

To the extent that the present can be explained by the past and that farming systems are largely determined by the over-all economic context, the construction of such models may serve as a basic tool for analysing the processes of agricultural development.

As the different stages of development correspond to specific situations, analysis of the process of development consists of explaining the transition from one situation to the next or from one stage to the next. Analysis of the process of development in Western agriculture for example would involve studying in turn: (a) the transition from semi-feudal subsistence agriculture to a craft-based agriculture which is beginning to become market-oriented; (b) the survival of craft-based agriculture in Europe in the mid-twentieth century; (c) the transition from craft-based agriculture to other forms of socio-economic organization at the stage of industrialized agriculture.

As we have already mentioned these questions are to be dealt with in another work which is now in preparation.

In the closing sections of the present study we shall merely outline the main trends in regard to the development of agriculture in the Western model.

## The main trends

**203 The development of Western agriculture within the economy as a whole.** We shall examine in turn the following basic trends in the development of agriculture within the economy as a whole: (a) the relative decline of agriculture; (b) the increasing integration of agriculture in the economy as a whole; (c) the changing pattern in regard to the transfer of resources.

The relative decline of agriculture has already been mentioned, but it should be noted that the scale of this decline is not only to be measured by the decrease in GDPA or in numbers engaged in farming in comparison with GDPT or with the total working population. Another sign is the decreasing importance of agriculture within the food sector. In the developed countries the food-production economy is no longer an 'agricultural economy'. The decline of agriculture can also be seen in the relative decrease in the value added by agriculture as such in the production of the agricultural sector.

Let us assume that S = P + V, where S = production of the agricultural sector; P = current purchases by agriculture; V = value added by agriculture:

$$\alpha_a = \frac{P}{S}, \quad (1 - \alpha_a) = \alpha_V = \frac{V}{S}.$$

The increase in production of the agricultural sector can be expressed as:

$$r_S = \alpha_a r_a + \alpha_V r_V$$

$$r_V = \frac{r_S - \alpha_a r_a}{(1 - \alpha_a)}.$$

The relative importance of the value added in the production of the sector decreases if the weighted increase in its sectoral purchases exceeds the increase in production. This can be seen to have happened in Western Europe, where the sectoral purchases of agriculture represented less than 5 per cent of that sector's production at the beginning of the nineteenth century and now probably represent from 30–50 per cent, owing to increased intermediate consumption of fertilizers, pesticides, fuel, animal feedingstuffs, etc. This is an important aspect of the integration of agriculture within the economy as a whole.

To sum up, the relative decline of agriculture in the economy as a whole manifests itself in three basic forms: in relation to the economy as a whole, in relation to the food sector and in relation to the production of the agricultural sector itself.

Increasing integration of agriculture in the economy as a whole is measured mainly by increases in inter-sector exchanges and in purchase and sales coefficients as well as input–output coefficients. At the beginning of the process of development agriculture's purchases from processing industries are limited. As the process of development continues the food surplus grows, for agricultural production is increasing more rapidly than subsistence consumption. The result is an increase in market-oriented farming and a relative decrease in subsistence farming. The structure of agricultural demand also begins to change.

Let us assume $d = i + f$, where $d$ = agricultural and food demand; $i$ = intermediate demand of processing industries; $f$ = final demand for unprocessed agricultural products:

$$\frac{i}{d} = \alpha_i \frac{f}{d} = \alpha_f = (1 - \alpha_i).$$

The increase in agricultural demand can be written:

$$r_d = \alpha_i r_i + \alpha_f r_f.$$

As the process of development continues $r_i$ increases more rapidly than $r_f$, and $\alpha_i$ also increases. In the advanced countries $\alpha_i$ is greater than $\alpha_f$ and agriculture has become a sector which produces mainly intermediate goods.

The integration of agriculture in the economy as a whole means that it can now 'entrain' or carry along in its wake other sectors. This can be shown by calculating the multiplier effect on final demand, measured either at the stage of intermediate consumption or at that of total production, by the distribution of the value added, by the effects of investment and by the effects of the increase in agricultural incomes linked with that in the value added.

Studies now being carried out would appear to indicate that increased final demand for agricultural products has a considerable effect on intermediate consumption, as has an increase in agricultural incomes on over-all incomes. Studies carried out in the United States have shown that on average $1 of agricultural income will lead to an increase in over-all income of $3.37, whereas $1 of non-agricultural income will lead to an increase of only $1.46. [1]

The results would indicate that agriculture is well integrated in the over-all economy of the advanced countries.

Regarding changes in the transfer of resources, the transfer of resources from agriculture to industry is a fundamental characteristic of the process of development. As industrialization develops on the basis of an agricultural economy the non-agricultural sector expands by creating new resources and drawing others from the agricultural sector. Transferred resources consist mainly of land, manpower and capital.

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[1] A. Mirakhor and F. Orazem, 'Importance of the Farm Sector to the Economy: a Multiplier Approach', *American Journal of Agricultural Economics*, 1968, p. 913–20.

At the beginning of the process of development the basic function of agriculture is to produce food-stuffs and other commodities to meet everyday needs. This minimal output can be increased both by extending the area under cultivation and by using more intensive methods. Thus in many advanced countries the area of agricultural land increased up to the beginning of the twentieth century when it reached a peak, and then began to decrease. Once a certain stage of development has been reached rural areas tend to shrink as cities and communications networks expand and farmers abandon marginal agricultural land. At this stage the countryside is put to a variety of uses rather than being devoted mainly to agriculture, as in the past. It is used for industry, tourism, housing (accommodation for city workers) and leisure activities (regional and national parks). It would seem that transfer of land outside the agricultural sector tends to accelerate in the industrial society. Farmers are thus gradually deprived of an asset whose value tends to increase.

The agricultural sector constitutes a pool of manpower on which other sectors draw as they require. Transfer of agricultural manpower to industry is only possible to the extent that increased productivity in agriculture enables increased demand to be met. Examination of the history of Western development shows that the difference in productivity and income from the agricultural to the non-agricultural sector, together with other expected advantages, provided sufficient incentive for country people to leave the land and industrial demand for the transfer of agricultural labour was adequately met by the workings of the market. But this was not a painless process, particularly at the beginning. In advanced societies various measures are taken to reduce the hardship involved in such transfers. The relative decrease in agricultural manpower which was a feature of Western development was accompanied by variation in the size of the agricultural population; first there was an increase in absolute value followed by relative stagnation and then a decline. In Great Britain the agricultural population began to decrease in absolute value around 1820, in Sweden around 1880, in France around 1900, in the United States around 1910, in Italy around 1920, in Germany around 1925 and in the Soviet Union around 1956. At present, even in the most advanced countries, there are still significant differences in income from one sector to another which lead to further transfers of manpower. In countries where only a small percentage of manpower remains in the agricultural sector there have nevertheless been significant reductions in recent years, as can be seen from Table 46.

The part played by workers of agricultural origin in swelling the numbers employed outside agriculture tends however to decrease in absolute value, mainly because the agricultural population is a relatively small proportion of the total population.

Savings were probably transferred from agriculture to other sectors on a large scale in the course of Western development although there are no figures available for the transfer of capital between agriculture and industry. In the Western model agriculture tends to become a heavy industry, with capital accounting for a high or very high proportion of factor costs, which probably slows down the transfer of agricultural savings to industry, and might even result in a reversal of traditional flows and the emergence of a net transfer of savings from other sectors towards agriculture.

TABLE 46. Agricultural manpower as a percentage of total manpower and reduction in the agricultural labour force (percentage per annum)

| Country | Agricultural manpower as a percentage[1] | Average annual rate of reduction[2] |
|---|---|---|
| United States | 8.5 | 2.8 |
| Germany (Federal Republic) | 12 | 4 |
| Canada | 12 | 4.1 |
| United Kingdom | 4 | 1.7 |
| Netherlands | 10 | 2.4 |

1. 1962 or nearest year.
2. 1956–60 or nearest period.

*Source:* OECD, *Agriculture and Economic Growth*, p. 22, 63, Paris, OECD, 1965, 124 p.

**204 The development of international trade.** As the Western economies developed, international trade increased, particularly in agricultural and food products.

During the first half of the eighteenth century Great Britain, which had completed its agricultural revolution, was able to export wheat and flour, but by the end of the eighteenth century she had become an importer.[1] As her textile industries developed she began to import cotton on a large scale. From 1775 to 1800 imports of cotton increased eightfold. By the middle of the nineteenth century the pattern of Great Britain's international trading relationship was already clearly established: her imports consisted mainly of raw materials and food products and her exports mainly of industrial goods.

The emergence of this external trading pattern was no doubt one of the factors contributing towards the rapid decline in Great Britain's agricultural population. Increased food imports slowed down the rate of growth of agricultural production at home and the increase in industrial exports encouraged industrial expansion and accelerated the transfer of agricultural workers to fill new jobs in the booming industries. In 1900 only 10 per cent of Great Britain's total population was engaged in the agricultural sector, a figure which was to be reached by the United States only towards the middle of the twentieth century and which France had still not reached in 1972.

From the end of the nineteenth century to the outbreak of the First World War was the heyday of international trade, the volume of which more than tripled during this period while the population increased by only 25 per cent. The trade of Western Europe and North America together represented more than 60 per cent of world trade during this period. Between the wars the situation fluctuated but in 1950 world trade entered upon another period of expansion.

It is difficult to assess the part which world trade played in the increased demand for food products in the importing countries. In any case this varied greatly from one country to another, with the United Kingdom at one end of the scale.

As we have seen, agricultural exports have a very important part to play in the LDCs. In the DCs of the West international trade in agricultural products represents a small proportion of GDP, as shown in Table 47.

On the other hand trade in agricultural products accounts for quite a large percentage of some of the advanced countries' total international trade (Table 48).

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[1] Bairoch, *Révolution Industrielle et Sous-développement*, op. cit., p. 226.

TABLE 47. Agricultural imports and exports as a percentage of GDP

| Country | Imports | Exports |
|---|---|---|
| United States | 0.8 | 0.9 |
| Canada | 2.1 | 3.8 |
| Sweden | 3.4 | 0.9 |
| Germany (Federal Republic) | 4.6 | 0.4 |
| France | 2.2 | 1.8 |
| United Kingdom | 6.9 | 0.9 |
| Netherlands | 7.4 | 11.5 |

*Source:* OECD, *Agriculture and Economic Growth*, Table 1, p. 22, Paris, OECD, 1965, 124 p.

TABLE 48. Percentage share of agriculture (by value) in total trade (1965)

| Country | Imports | Exports |
|---|---|---|
| United States | 26 | 28 |
| Canada | 35 | 13 |
| Denmark | 55 | 22 |
| Germany (Federal Republic) | 4 | 33 |
| France | 20 | 30 |
| Netherlands | 30 | 23 |
| United Kingdom | 10 | 53 |
| Australia | 81 | 10 |
| New Zealand | 95 | 11 |

*Source:* FAO, *The State of Food and Agriculture, 1970. Annual Report*, Annex, 274 p.

In Europe agricultural exports represent more than 50 per cent of total exports in one country, Denmark, and in only one country, the United Kingdom, do agricultural imports represent more than 50 per cent of total imports.

The role of agriculture in the external trade relationships of the DCs varies. Some are net exporters (Canada, Denmark, the Netherlands) while others rely heavily on imports (United Kingdom, Federal Republic of Germany). Exports are particularly important in Australia and New Zealand, countries whose settlement and development were directly linked with Western development, and more particularly with that of the United Kingdom.

For importing countries another way of assessing the importance of international trade is to show net imports as a proportion of total food resources.

When analysing international trade and its future outlook a distinction should be drawn between temperate and tropical products. Europe imports food-stuffs which it cannot produce itself (cocoa, coffee, cotton, tropical fruit, spices, etc.), although substitution is sometimes possible.

The general trend is for the United Kingdom and the Common Market countries to increase their degree of self-sufficiency. From 1953 to 1958 the ability of home producers to supply United Kingdom needs increased from 9.2 to 11.8 per cent for butter, from 19.4 to 32.5 per cent for sugar, from 37.5 to 40.7 per cent for cheese, from 57.2 to 60.8 per cent for cereals, from 60.2 to 65.7 per cent for pork, from 65.8 to 75 per cent for beef and veal, from 85.5 to 98.5 per cent for poultry, etc.[1]

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[1] G. Lombard, 'L'agriculture Britannique: une Industrie Moderne mais Coûteuse', in R. Badouin, *Économie Rurale*, p. 317, Paris, A. Colin, 1971, 598 p.

TABLE 49. The EEC's self-sufficiency in agricultural products

| Products | 1960 | 1967/68 |
|---|---|---|
| Wheat | 90 | 112 |
| Coarse grains | 77 | 79 |
| Rice | 81 | 101 |
| Beef and veal | 95 | 89 |
| Pork | 100 | 100 |
| Poultry | 89 | 98 |
| Oils and fats | 37 | 36 |
| Milk | 102 | 104 |
| Butter | 100 | 107 |
| Sugar | 135 | 105 |

*Source:* C. Baillet, 'La Place de l'Agriculture dans les États Membres des Communautés Européennes', *Revue du Marché Commun*, November-December 1969.

The EEC countries have also considerably improved their degree of self-sufficiency in recent years, as can be seen from Table 49.

The Community has therefore become self-sufficient in many products; but deficits remain for coarse grains, beef and veal and oils and fats. The increase in the EEC's degree of self-sufficiency is a result of the implementation of protectionist policies and the remarkable expansion of European agriculture in recent years.

The trend towards self-sufficiency, indeed over-production, in European agriculture has resulted in some disruption of international trade in agricultural products even among OECD countries, and makes it even more difficult for LDCs to penetrate the DCs' markets as far as temperate products are concerned.

**205 Internal changes in agriculture.** We shall confine our attention to three major trends, relating respectively to the increasing 'commercialization' of Western agriculture—the extent to which it is increasingly oriented to the market, the more intensive use of capital and the increase in the productivity of labour.

The first major trend, the increasing commercialization of agriculture, has three main aspects: the increase in the percentage of agricultural production marketed, the decreased proportion of their food requirements which agricultural households produce themselves and the decreased extent to which they are self-sufficient for the supply of production requisites. The first trend can be illustrated by our simplified descriptive model of Western development (Table 45).

Assuming that 'country-dwellers' and 'town-dwellers' consume equal amounts of food during development stage 1 the amount consumed by producers would represent 80 per cent of total agricultural production and produce marketed 20 per cent. But there is probably no evidence to prove that this is the case. An economically exploited farmer may only eat what remains of his produce when the landowner and possibly the money-lender have been given their due. As the process of development continues there may be a tendency towards parity of food consumption in town and country with the scales perhaps even tipping in favour of the countryside in DCs.

When the economy has become industrialized the proportion of farm produce marketed reaches 80–95 per cent. From 1960 to 1963 the proportion was 97 per cent in the United States and 99 per cent in the United Kingdom.

A more dramatic way of characterizing the commercialization of agriculture is to consider the development of food demand in the 'non-agricultural' population per agricultural worker. Column 5 of Table 45 gives a first indication. From stage 1 to stage 3 (b) the number of non-agricultural workers per agricultural worker is multiplied by 36; it is multiplied by 76 as the economy progresses from stage 1 to stage 4: The magnitude of the increase in the number of non-agricultural workers (from a proportion of 0.25 to 10 or 20) would lead to a proportionate increase in the required output per agricultural worker if the standard of nutrition per inhabitant remained constant. The increase calculated above results solely from the transfer of manpower. Another factor which should be taken into consideration is the increase in *per capita* incomes. The transfer of agricultural manpower combined with the increase in *per capita* incomes leads to a rapid growth of over-all demand for food. This on the one hand and the decrease in the agricultural labour force on the other bring about a rapid growth in the required output of food per agricultural worker. If the diet expressed in final calories were assumed to increase by 50 per cent from stage 1 to stage 4 in the model shown above, the required output per agricultural worker would be increased more than a hundredfold! The increase in the required output of food per agricultural worker is the main variable to be borne in mind when explaining the socio-economic transformations taking place in agriculture.

A second aspect of the commercialization of agriculture is the decreasing proportion of its total food requirements which the average agricultural household produces itself. In about 1960 bought products represented 60 per cent of the consumption of an agricultural household in the United States and approximately 50 per cent in France and Japan. Agricultural produce consumed on the producer's own holding is obviously a far higher percentage of food consumption than of agricultural production.

A third aspect of the commercialization of agriculture is the decreasing ability of farmers to supply their own needs for commodities other than food and increasing expenditure on production requisites and everyday supplies. Whereas in the eighteenth century Western farmers were able to make at least some of the implements they required themselves, used biological fuels and organic manures, etc., the twentieth-century farmer buys farm machinery, fossil fuels, chemical fertilizers, pesticides, etc. As we have seen, sectoral purchases tend to increase more quickly than the production of the agricultural sector. Current purchases by the agricultural sector from other sectors may represent 30–50 per cent of the value of agricultural production.

The increasing commercialization of agriculture means that this sector becomes increasingly integrated within the market economy. The changing relationship between producer and consumer prices in both agriculture and industry is a major factor determining the income of farmers as compared to other incomes.

Capital investment in agriculture increases. One of the basic characteristics of the process of development is the substitution of mechanical for biological energy and of capital for labour in the production process.[1]

Increased investment in agriculture can be pin-pointed by calculating the capital/output ratio, whether incremental or average, and the capital invested per manpower unit. Capital in agriculture may take various forms: land capital (Kl), fixed working capital of industrial origin (machinery and various items of equipment) (Ki), fixed working capital of agricultural origin (live cattle stocks) (Ka) and circulating capital (stocks of current purchases and semi-finished or finished goods to be consumed on the holding or sold) (Kc).

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[1] OECD, *Capital and Finance in Agriculture*. Vol. 1: *General Report*, Paris, OECD, 1971, 112 p.

$$\mathrm{Kt} = \mathrm{Kl} + \underbrace{\mathrm{Ki} + \mathrm{Ka} + \mathrm{Kc}}_{\mathrm{Kw} \,=\, \text{working capital.}}$$

During the process of development the composition of agricultural capital changes. In general the relative importance of working capital tends to increase and that of land capital to decrease. However land capital still represents the major part of total capital, more than 50 per cent in the OECD countries, but over 70 per cent in Canada, the United States, the United Kingdom, Denmark, the Netherlands and Japan.[1] The percentage of working capital made up by capital of industrial origin (Ki + an increasing proportion of Kc) also tends to increase.

As indicated, the growth of capital investments in agriculture can be demonstrated by calculating the marginal or average capital/output ratio or the capital invested per hectare or per manpower unit.

Several ratios can be calculated, depending on whether only certain types of assets or the whole of the agricultural capital are taken into consideration. Capital investment may also be compared with agricultural production or with the value added.

Available data indicate that the average total capital stock per unit of agricultural production (ACOR)[2] is often higher in agriculture than in the other sectors. This can be explained by the diversification of activity on agricultural holdings, the under-utilization of capital (some machines are used for only a few days each year), the need to do a lot of work in a short time (stand-by equipment), the smallness of agricultural holdings, the high price of land, etc. As we have seen, land represents an important part of total capital and if it is left out of account, this considerably reduces the value of the ACOR. National accounting systems make it possible to calculate the incremental ratio (ICOR).[3] Results differ considerably from country to country and their interpretation can be rather troublesome.

The value of agricultural capital per hectare has considerably increased in recent years. From 1957 to 1967 the rate of over-all growth was over 5 per cent per annum in most OECD countries. In general land capital increased more than working capital.[4]

The growth in capital per manpower unit is even more striking. If $K = Nk$, where $K$ = total capital invested in agriculture; $N$ = working population; $k$ = capital per worker, we can write:

$$r_K = r_N + r_k$$

$$r_k = r_K - r_N.$$

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[1] OECD, *Capital and Finance in Agriculture*, op. cit., p. 33.

[2] ACOR—Average capital/output ratio: $\frac{\text{Capital stock}}{\text{Production}}$.

[3] ICOR—Incremental capital/output ratio: $\frac{\text{Increase in capital}}{\text{Increase in production}}$.

[4] OECD, *Capital and Finance in Agriculture*, op. cit., p. 40.

Total agricultural capital has increased rapidly and in the DCs the numbers employed in agriculture have diminished, thus giving a steep rise in the capital per manpower unit. For example if capital increases by 5 per cent per annum and the numbers employed in agriculture decrease by 3 per cent, the capital per worker increases at a rate of:

$$r_k = 5 - (-3) = +8 \text{ per cent.}$$

Thus in many advanced countries the amount of capital invested per worker has more than doubled in the last ten years.[1]

The rapid increase in capital invested per manpower unit means that finance is often a serious problem for agricultural holdings, sometimes involving them in debt.

Increased agricultural production and the transfer of manpower from agriculture to other sectors taken together obviously mean increased productivity of agricultural labour.

The agricultural revolution in Europe (which preceded the industrial revolution) increased agricultural yields. But productivity in agriculture increased very slowly as long as the agricultural population continued to increase. When the increase in production and the decrease in population begin to accelerate productivity soars. This is what has happened in most advanced countries over the last ten years. Thus during the period 1957–65 in the EEC countries taken as a whole production increased by 3.3 per cent per annum, the numbers engaged in agriculture decreased by 3.4 per cent per annum and in consequence production per agricultural worker rose by 6.7 per cent per annum.

Bearing in mind that increased supply of agricultural products is partly a result of increased demand and that the variation in the agricultural population depends on the rate at which new jobs are created outside agriculture, it follows that the productivity of agriculture is the basic variable in its adjustment to over-all economic growth.

Agricultural productivity can only adjust to the over-all rate of growth by an internal process which increases per hectare yields and the surface area available per worker.

Progress in biology, chemistry and technology resulted in considerable increases in per hectare yields in the course of Western development. This was achieved by improving crop and livestock processing coefficients, increasing the number of harvests, making more economic use of space for stock raising, better geographical siting of crops and pasturelands and, in the twentieth century, the abandonment of marginal lands with low productivity (withdrawal from mountainous or infertile areas).

The agricultural population having decreased more rapidly than the surface area under cultivation, the surface area available per agricultural worker has increased.

Let us assume that: $S = N \times s$.

We know that:

$$r_S = r_N + r_s$$
$$r_s = r_S - r_N$$

where: $r_s$ = rate of increase in cultivated area per agricultural worker; $r_S$ = rate of increase in total cultivated area; $r_N$ = rate of variation in agricultural labour force.

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[1] OECD, *Capital and Finance in Agriculture*, op. cit., p. 62.

In most advanced countries the agricultural area has varied relatively little over the last ten or fifteen years, so that the increase in surface area per worker has been determined by the rate of decrease in the agricultural labour force.

As the labour force has decreased and area per worker increased, holdings have tended to become larger.

Let us assume: $S = N_e \times s_e$. We can deduce: $r_{se} = r_S - r_{Ne}$, where $r_{se}$ = rate of growth of average size of holding; $r_S$ = rate of growth of cultivated area; $r_{Ne}$ = rate of decrease in number of holdings.

Available statistics show that the annual rate of reduction in the number of holdings is lower than the rate of decrease in the labour force.

TABLE 50. Annual rate of decrease in the number of holdings $r_{Ne}$ and in agricultural labour force $r_N$ (1950–60 or nearest period)

| Country | $r_{Ne}$ | $r_N$ | Country | $r_{Ne}$ | $r_N$ |
|---|---|---|---|---|---|
| United States | 3.1 | 2.8 | Denmark | 0.4 | 2.6 |
| Canada | 2.6 | 4.1 | Netherlands | 1.4 | 2.4 |
| Germany (Federal Republic) | 1.6 | 4.2 | United Kingdom | 1.2 | 1.7 |

*Source:* OECD, *Agriculture and Economic Growth*, Table 19, p. 63, Paris, OECD, 1965, 124 p.

Of the countries listed in Table 50 only the United States shows a sharper reduction in the number of holdings than in the numbers engaged in agriculture for the period under consideration.

The fact that the number of agricultural holdings in general decreases less rapidly than the number of agricultural workers can be largely explained by the mechanism whereby holdings are passed on from one generation to the next. In other words the number of workers who are members of the farmer's family or wage-paid workers tends to decrease more rapidly than the number of farmers. The average size of holdings therefore remains very small in many advanced countries.

TABLE 51. Average size of holdings (1965–70)

| Country | Average area (ha) | Country | Average area (ha) |
|---|---|---|---|
| United States | 212 | France | 24 |
| Canada | 207 | Netherlands | 16 |
| Germany (Federal Republic) | 10 | United Kingdom | 68 |
| Denmark | 20 | | |

*Source:* OECD, *Capital and Finance in Agriculture*, Vol. I: *General Report*, p. 32, Paris, OECD, 1971, 112 p.

Comparison of the above figures from one country to another is difficult, for the surveys were not carried out on the same basis. In certain countries the figures refer to commercial holdings (Canada, United States, United Kingdom), in others very small holdings are not included (France), while in others all holdings have been included.

In most European countries holdings are still relatively small; increased productivity therefore must result to a large extent from internal reorganization of the holding rather than from an increase in size. Internal reorganization involves adapting working methods to technological progress and reorganizing work in such a way as to reduce manpower requirements per unit of surface area.

**206 The relative pauperization of the farming population.** During the process of development farm incomes have always been lower than others, a ratio of 1 : 2 giving perhaps an approximate picture of the situation. This is to some extent a pre-condition for over-all development, providing the stimulus for the transfer of agricultural workers to other sectors. However, as the process of development continues, the progressive absorption of agricultural underemployment and the increase in the productivity of labour should lead to an improvement in the situation.

The many difficulties which attend evaluation of farm incomes are due to the inadequacy of statistics and also to their fluctuation in time (variations in harvests and in prices), the difficulty of making a satisfactory estimate of the cost of certain factors which are not paid for (the land of the owner-occupier, labour of members of the family, ability to supply own needs for tools, manure, etc.), and of certain advantages (consumption of own produce), the increasingly frequent diversification of sources of revenue in farming families, etc. However, surveys and national and agricultural accounts confirm that in most countries agricultural incomes are relatively low.

It is also difficult to compare average incomes from one sector to another and when comparing incomes in different countries one finds that definitions of production, agricultural population and non-agricultural population vary. Moreover, as we have seen, incomes do not measure standards of living; the purchasing power of the income received depends on the cost of living which may not be the same in the countryside as in the towns. Nevertheless the observable differences are so great that the relative pauperization of the agricultural population is beyond doubt.

There are, however, wide disparities within the separate countries, depending on the system of production and particularly on the size of holdings. Available statistics reveal that the average net agricultural income per family can vary from 1 to 5 and even from 1 to 10 depending on the size of the holding [6, p. 52]. Moreover, income obtained from non-agricultural sources by families in the agricultural sector is not shown in Table 52. In fact surveys carried out in various countries indicate considerable diversification in the activities of families in the agricultural sector and therefore a corresponding diversification in sources of income. In the smallest holdings the farmer himself engages in activities outside agriculture, with the result that he is only employed in agriculture on a part-time basis.

TABLE 52. *Per capita* incomes in agriculture as a percentage of those in the rest of the economy (three-year averages for gross national product at the beginning of the sixties)

| Country | Income | Country | Income |
|---|---|---|---|
| United States | 48 | Denmark | 65 |
| Canada | 56 | France | 43 |
| Germany (Federal Republic) | 67 | Netherlands | 99 |

*Source:* FAO, *The State of Food and Agriculture*, 1967, p. 52, Rome, FAO.

In general, agricultural incomes have increased at the same rate as the national income in recent years without however noticeably improving the relative position of the farm sector.

The relative stagnation of agricultural incomes, in spite of the fact that productivity has increased more rapidly in agriculture than in other sectors of the economy, is the main cause of agricultural unrest in the industrial society. This unrest is further exacerbated by the rapid changes brought about by the process of over-all development and by the introduction of agricultural technology which together may call into question the forms of socio-economic organization stemming from the craft-based period of Western agriculture.

## Agricultural development in the West and the development of education

**207 Education and development.** We have already examined the relationship between development and education in the chapter devoted to agricultural development strategy in the LDCs. There are 'dialectical' links between education and development, and education is both the cause and the consequence of the development process. A high level of education encourages growth but, to a certain extent, a high level of education is itself a consequence of wealth: 'As family incomes increase young people wish to study longer and their parents can enable them to do so; in the same way, as national incomes and the financial revenue of governments increase, more money can be devoted to education.'[1] In the West the number of illiterates declines as industrialization took place, gradually raising *per capita* incomes.[2] In general, education has progressed more slowly in agriculture than in other sectors of the economy. All the available statistics show that the sons of peasant farmers and wage-paid agricultural workers are the least well represented in higher education, that agricultural workers receive the shortest education and that the agricultural sector boasts the smallest proportion of people with higher or intermediate qualifications in science or technology. But the slower progress of education in the agricultural sector, like the progress of education in the country as a whole, seems to be directly linked with the process of industrialization. Estimates made in some OECD countries led to the following conclusion: more is invested in education in the agricultural sector in the most industrialized countries than in countries where agriculture is the more important sector of the economy.[3]

Vigorous action by the public authorities to make the general system of education accessible to all young people is necessary if sectoral disparities in access to education are to be reduced and if the poor sectors are to become richer. In the process of Western development standards of education and information in the agricultural sector were considerably improved; however the agricultural system of education is still not completely integrated in the general educational system and access to the highest level of education still depends to a certain extent on social origin.

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[1] Svennilson, *Policy Conference on Economic Growth and Investment in Education*, Paris, OECD, 1962.

[2] Unesco, op. cit., p. 177.

[3] Louis Malassis, *Intellectual Investment in Agriculture for Economic and Social Development*, Paris, OECD, 1963, 152 p. (Food and Agriculture Documentation Series, 180.)

When envisaged from the standpoint of socio-economic development as a whole, education is a historical category, determined by the various stages of development. The Western model shows the industrial society forming within the capitalist system as a result of innovations and transfers of resources from the traditional rural society towards the expanding industrial sector, and as a result of the parallel socio-economic transformation of rural society. In what follows we shall examine some essential aspects, first, of the relationship between general and agricultural education within the context of Western development, and second, of agricultural education in the industrial society.[1]

**208 The Western process of industrialization and agricultural education.** The technical revolution and accompanying social transformations which occurred in Great Britain and then other countries in the eighteenth and nineteenth centuries formed the basis of economic take-off in the West. The educational system does not seem to have played a decisive role in this process: the inventors who were to revolutionize production techniques were more often than not simple craftsmen; the entrepreneurs were adventurers rather than men whose decisions were based on rational economic calculations, and the workers were mostly illiterate. But as industrialization progressed the number of illiterates declined and education became more widespread.

Compulsory State education was introduced in most of the advanced countries during the nineteenth century: in Denmark in 1814, Great Britain in 1870, France in 1882 and Japan in 1886. The purpose of the system of education which emerged at the beginning of the nineteenth century was to train an élite which alone would receive a general education and consequently have access to university. The choice of education was made very early, at the age of 11 or 12, and there was very little possibility of transfer from one type of education to another thereafter.

In such circumstances the choice of either general or vocational education is determined very largely by social origin.

The educational system gradually extends its benefits to the peasantry, but during the take-off period they are mainly illiterate. Nevertheless in Great Britain, as on the European continent, the agricultural revolution was to play a decisive role in economic take-off. This revolution seems to have been due to a large extent to the efforts of 'enlightened individuals' who took an interest in agriculture and tried to promote education in the countryside. Thus in Great Britain a few rich landowners were to play a leading role in encouraging progress in the agricultural sector in the context of the general process of historical development. In France the physiocrats, inspired by the example of British farmers, worked out the theory of the 'new agriculture', founded agricultural colleges and launched what was to develop into the agricultural extension service.

Every Western country can boast of the 'pioneers' of its agricultural revolution.

In the course of development the benefits of primary education gradually spread to the countryside, but the structure of Western educational systems and the relative poverty of country people in general precluded their access to secondary or higher education and even to vocational training.

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1. Louis Malassis, 'Education and Agricultural Development', *International Social Science Journal*, Vol. XXI, No. 2, 1969, p. 244–55.

The system of craft-based (peasant) agriculture which emerged everywhere in Europe except in Great Britain during the nineteenth century was based on small farms worked by the farmer's family. These family holdings required children to make their contribution at an early stage. Farmers could not therefore afford to educate their families and in any case their own level of education and information, their traditions and sometimes the irrelevance of formal instruction all tended to discourage the view that education is the key to success in the rural environment.

Progress was made in agriculture none the less, with productivity increasing per unit of area and per agricultural worker, and these results seem to have been achieved mainly thanks to the dissemination of new knowledge and techniques through the work of the pioneers, agricultural 'shows', country schools, etc. and the gradual introduction in most West European countries of agricultural extension and information services. The extension workers sowed demonstration crops, drew up tracts and wrote articles, held lectures and organized courses in teacher training colleges. The capabilities of people with higher or intermediate qualifications in agriculture who could not be employed on an individual family holding were harnessed to the cause of rural development through the extension services, which probably did more to spread the benefits of progress throughout the whole agricultural sector than did the formal agricultural education system. They made farmers keen to acquire more detailed knowledge and in a second stage were to encourage the development of vocational training.

**209 The industrial society and agricultural education.** The first world conference on agricultural education and training, organized on the initiative of the United Nations (FAO/Unesco/ILO), was held in Copenhagen from 28 July to 8 August 1970. The reports on the conference [1] include general and regional papers. From the reports on North America and Europe a clear picture emerges of the development of agricultural education in the West. [2]

Differences between North America and Western Europe in this respect are due to specific historical processes and to the difference in present-day production structures from one continent to the other. Europe has retained the family approach to farming, the average size of holdings is much smaller than in North America and production less specialized, but rapid changes have taken place since the Second World War. In an industrial society agriculture itself tends to become industrialized as methods, structures and behaviour patterns which have formed in the industrial society begin to penetrate the agricultural sector and are gradually accepted. Having passed from semi-feudal subsistence farming to a market-oriented craft-based type of farming Western agriculture is now entering on a transitional period which seems to be leading towards the stage of industrialized agriculture: Western agriculture is now going through a second period of historic transformation.

The socio-economic changes now taking place are having their effect on farmers' attitudes to the education system and indeed on the objectives, structures and methods of the system itself. Western farmers are inclined to reject any system of education which would make their children a special category in society. The integrated, problem-oriented, co-ordinated system of rural education and information, organized on a comprehensive and lifelong basis, the principle of which we have already outlined and discussed in Chapter 3 above, has not yet been created, but this is unmistakably the direction in which events are leading and at the same time the internal transformation of agriculture is bringing about changes in the content and methods of agricultural education.

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[1] United Nations, op. cit.

[2] United Nations, op. cit., Vol. II, p. 59–72 (Western Europe); p. 115–37 (North America).

> A pattern may be outlined as follows: the most extensive possible basic education, common to all, and provided by schools of a single type which have educational guidance classes, should be used as a foundation on which to build, as late as possible, different types of educational options variously determined by the types of training required in the operation and development of industrial society. According to this pattern agricultural education is integrated into the global educational system, and becomes separate only at the level of vocational training. In this way the system should help to eliminate social differences and to abolish the old distinction between general and technical; it should also result in the production of 'educated technicians', that is to say, men and women capable of performing a function in a technological society and of investing this function with a real human significance.[1]

In connexion with the internal changes taking place in agriculture it may be useful to mention some of the basic problems involved in the evolution of agricultural education:

1. The changes which have taken place in the food production complex in Western Europe and North America have resulted in the food production economy ceasing to be predominantly agricultural. Training courses for management and technicians for the food-production sector must now devote attention to the four basic subsectors of the food-production economy: industries supplying agricultural production requisites, agriculture, food industries and food distribution. The ultimate aim of courses in agricultural and food-production economics can be redefined as training graduates in scientific or technical subjects with a comprehensive approach to the economy of the food-production sector, its relationship with other sectors of the economy as a whole and the changing relationships between the different subsectors within the food-production economy.
2. The changing nature of agriculture and of the human environment entails a completely new approach to agricultural education. Instead of being based on the acquisition of operational techniques relating to certain limited aspects of plant or animal life, courses in agriculture should now deal with the whole process of production within the general context of the preservation and enhancement of nature. This new approach involves a study of 'systems analysis and systems management'[2] and considers agricultural activities in relation to the use of the countryside in general.
3. When agriculture has become industrialized, capital-intensive and market-oriented one of the main functions of agricultural education should be to provide a training in business management for those in charge of agricultural enterprises and food-production complexes.
4. In the context of the Western family approach to agriculture the need to form a 'counterweight' to the growing industrialization and the concentration of capital in the economic environment in which agriculture has to operate, calls for the formation of group structures through which farmers can work together. Producer groups, farm co-operatives, group farming, etc., are different institutional approaches which have been devised to safeguard the forms

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[1] Malassis, 'Education and agricultural development', op. cit.

[2] United Nations, op. cit., Vol. II, p. 135.

of socio-economic organization based on individual enterprise and family work. An education which trains people for participation in group structures must include basic training in group dynamics (leadership, communication, the mechanics of group decision-making, etc.).

5. Rapid changes in technology, and sometimes in the social sphere as well, mean that degrees and diplomas soon lose their value. In an industrialized society lifelong education is an essential condition of professional competence and personal fulfilment.

This is only a small part of what could be said on the relationship between education and development: we intend to deal with this subject in more detail in another publication.[1]

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[1] Malassis, *Economic Development and the Programming of Rural Education*, op. cit.

# *Final reflections*

**210** In this study we have concerned ourselves basically with a model consisting of two sectors, agriculture and industry, which, as we have already pointed out, is a simplification of socio-economic realities. The industrial society develops gradually, through the invention of new techniques and new resources and the transfer of agricultural resources to industry. From a historical standpoint the process of industrialization does appear to be the catalyst which makes it possible to increase material resources and transform social relationships. But agriculture's part in this process is nevertheless crucial, whether as a 'leading' sector during the take-off stage or following suit when industry leads the way. Industrial society is founded on the efforts of the urban worker but also on work done on the land, the increased productivity of which is in the last resort the basis of all progress. Agriculture contributes to over-all development in various ways with which we are now familiar, but farmers sometimes feel that they are not sharing in the benefits of progress on an equal footing with other socio-occupational categories, and it must be admitted that statistics bear this feeling out. Farm incomes are indeed lower than those of other socio-occupational categories.

This gives rise to a discontent which reaches its height when, at a certain stage of development, the agricultural sector begins to demand 'parity'. There are several interpretations of this concept, but in our opinion its basis is a desire for integration in society as a whole. The farmers of the industrial society lay claim to the benefits of this society and not only to its economic benefits but also to the diversity of cultural and social activity which it affords.

As development proceeds farmers and rural societies, faced with industrialization and the predominantly urban society which it fosters, often feel that their way of life is being undermined and have a tendency to become the self-styled custodians of traditional values. However, at a later stage of development the farmer begins to take more part in the life of society as a whole and to make his own specific contribution, that of a man in daily contact with nature and living forces.

The industrial society is as much the product of work by the country-dweller as by the townsman. The triumph of industry (which is incidentally responsible for various kinds of pollution) should not make us forget all that has gone into it on the part of those working on the land. We should like to think that this book will lead to a better understanding of the role played by country people in the process of socio-economic transformation, and that in this sense it may constitute both a tribute to those who work on the land and a mark of deep-seated loyalty and esteem.

**211** In our endeavour to give an over-all view of the relationship between agriculture and the process of development we have considered in turn the relations between agriculture and underdevelopment and those between agriculture and development. When analysing the relationship between agriculture and development we discussed agriculture's contribution to over-all growth, its role in bringing development about, agricultural development strategy and, lastly, the relative decline and the changes which take place in agriculture as development proceeds, this last chapter relating of necessity to the trends observed in the DCs. This course was dictated by our desire to proceed empirically, from observation of the facts, but is in no way intended to be a prediction of the way in which agriculture will develop in the LDCs. In our introduction we emphasized the importance of the historical context and the need to choose a path to development which is adapted to more or less specific circumstances. Agriculture in LDCs at the present time is set against a historical background radically different from that against which the West achieved economic take-off, and the development of LDCs is taking place in a very different economic context from that of Western development in the nineteenth century. But it is obvious that in both cases the rural population has an important contribution to make both to economic growth and to the construction of a new society. It is important that the population as a whole should recognize the true value of this contribution, for a society which appreciates work done on the land, and creates a system of lifelong education geared to development objectives that gives agricultural education its proper role as an integral part of over-all education, bearing in mind the aims and mechanisms of development, thereby demonstrates its genuine concern of effective action and at the same time does honour to itself.

But such societies are not easy to find: manual workers, and particularly those who work on the land, are often looked down on and rural education relegated to an inferior position. We are a long way from the 'society without scorn' evoked by René Dumont in his last book.[1] The historic rejection of humiliation and submission gives us hope for the future. But we have no illusions: development is a long and arduous process and, as F. Perroux has written, humanity's major objectives—to feed the hungry, educate and inform the ignorant, heal the sick and set the captives free—are still far from being achieved. This should make us consider our approach to 'zero growth' very carefully: the real problem is to distribute the benefits of world growth among the different countries in such a way as to reduce inequalities in development.

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1. R. Dumont, *L'Utopie ou la Mort*, Paris, 1973, 184 p. (Collection L'Histoire Immédiate.)

# *Appendixes*

# 1 The major international statistical yearbooks

| | |
|---|---|
| United Nations | *Statistical Yearbook*. New York. |
| | *Demographic Yearbook*. New York. |
| | *Yearbook of National Accounts Statistics*. New York. |
| FAO | *Production Yearbook*. Rome. |
| | *Trade Yearbook*. Rome. |
| | *Yearbook of Fishery Statistics*. Rome. |
| ILO | *Yearbook of Labour Statistics*. Geneva. |
| Unesco | *Statistical Yearbook*. Paris. |

# 2 Growth and development indicators for selected countries

TABLE 1A. Some characteristics of the larger less-developed countries (over 15 million inhabitants for Africa and over 20 million for Latin America—1968 figures)

| Country | Total population (millions of inhabitants) | Population per km² | *Per capita* national income (in dollars) at factor cost (1965) |
|---|---|---|---|
| Zaire | 17 | 7 | 64 |
| Ethiopia | 24 | 20 | 54 |
| Nigeria | 63 | 68 | 68 |
| Egypt | 32 | 32 | 161 |
| Argentina | 24 | 9 | 712 |
| Brazil | 88 | 10 | 143 |
| Colombia | 20 | 17 | 246 |
| Mexico | 47 | 24 | 412 |
| Burma | 26 | 39 | 61 |
| Korea (Republic of) | 30 | 309 | 102 |
| India | 524 | 160 | 89 |
| Indonesia | 113 | 76 | 78 |
| Iran | 27 | 16 | 219 |
| Pakistan | 110 | 125 | 95 |
| Philippines | 36 | 120 | 218 |
| Thailand | 34 | 66 | 106 |
| Turkey | 34 | 43 | 245 |

*Source:* United Nations, *Statistical Yearbook 1969*, Table 16, p. 57; Table 182, p. 557, New York, N.Y., United Nations, 1970.

Table 2A. The basic objectives of the human economy: food and health

| Country or area | *Per capita* GDP at market prices, 1967<br>1 | *Per capita* consumption (in dollars), 1967<br>2 | Calories (percentage of requirement), 1967<br>3 | Total proteins (percentage of requirement), 1967<br>4 | Animal proteins (percentage of requirement for total proteins), 1967<br>5 | Crude death rate per thousand of the population, 1968<br>6 | Infant mortality rates per thousand births, 1968<br>7 | Expectation of life at birth (years), 1968<br>8 | Annual rate of natural population increase (percentage), 1968<br>9 |
|---|---|---|---|---|---|---|---|---|---|
| Zaire | 83 | 71 | — | — | — | — | — | — | 2.3 |
| Ethiopia | 63 | 55 | — | — | — | — | — | — | 2.1 |
| Nigeria | 70 | 63 | 97 | 93 | 8 | — | — | 37 | 2.1 |
| Egypt | 187 | 169 | 125 | 109 | 15 | 14 | 119 | 53 | 2.2 |
| Argentina | 646 | 510 | 130 | 133 | 77 | 8.7 | 58 | 67 | 1.4 |
| Brazil | 381 | 310 | 113 | 101 | 28 | 11 | 93 | 61 | 3.1 |
| Colombia | 319 | 258 | 95 | 81 | 35 | 13 | 78 | 58 | 2.9 |
| Mexico | 538 | 439 | 113 | 108 | 24 | 10 | 66 | 53 | 3.4 |
| Burma | 70 | 63 | — | — | — | — | 114 | 31 | 1.5 |
| Korea (Republic of) | — | — | — | — | — | — | — | — | — |
| India | 81 | 75 | 86 | 85 | 11 | — | — | 41 | 1.9 |
| Indonesia | 94 | 94 | 85 | 74 | 15 | — | — | 47 | 2.2 |
| Iran | 300 | 225 | 84 | 84 | 19 | — | — | — | — |
| Pakistan | 129 | 113 | 98 | 96 | 19 | — | — | 51 | 3.1 |
| Philippines | 305 | 246 | 91 | 93 | 36 | 6.9 | 72 | 51 | 1.8 |
| Thailand | 155 | 117 | — | — | — | 13 | 28 | 56 | 3.3 |
| Turkey | 352 | 298 | 108 | 106 | 20 | 16 | 155 | 54 | 2.7 |
| Spain | 829 | 662 | 101 | 111 | 50 | 9.2 | 30 | 70 | 1.1 |
| Greece | 792 | 674 | 109 | 134 | 58 | 8.3 | 32 | 69 | 1 |
| Japan | 1 201 | 746 | 103 | 117 | 45 | 6.7 | 15 | 71 | 1.4 |
| France | 2 338 | 1 702 | 120 | 135 | 82 | 11 | 16 | 70 | 0.6 |
| United Kingdom | 1 976 | 1 626 | 120 | 119 | 73 | 12 | 19 | 71 | 0.5 |
| Sweden | 3 069 | 2 332 | 108 | 109 | 73 | 10 | 13 | 75 | 0.3 |
| United States | 4 038 | 3 328 | 120 | 129 | 94 | 9.5 | 21 | 70 | 0.8 |
| U.S.S.R. | 1 184 | 736 | 121 | 124 | 48 | 7.7 | 26 | 70 | 1 |
| Africa | 135 | 114 | | | | | | | |
| Latin America | 466 | 360 | | | | | | | |
| North America | — | — | | | | | | | |
| Asia | 129 | 112 | | | | | | | |
| Europe | — | — | | | | | | | |
| Oceania | — | — | | | | | | | |
| DC(M)s | 2 232 | 1 744 | | | | | | | |
| LDCs | 180 | 152 | | | | | | | |
| Over-all average | — | — | | | | | | | |
| DC(P)s | 1 183 | 749 | | | | | | | |

*Source:* United Nations, *World Economic Survey 1969–1970* Tables A1, A6, A8, New York, N.Y., United Nations, 1971, 248 p.

TABLE 3A. The basic objectives of the human economy: education [1]

| Country | Percentage of literates in the adult population (over 15 years) 1 | Percentage of the population which has had a formal education 2 | Percentage of the adult population that has completed formal education up to end of secondary level 3 | Newsprint consumption in kilograms, 1966 4 | Enrolment at primary level (percentage of relevant age group) 1965 5 | Enrolment at secondary level (percentage of relevant age group) 1965 6 | Enrolment at tertiary level (percentage of secondary enrommemt) 1965 7 | Public expenditure on education (as percentage of GNP) [2] 1965 8 |
|---|---|---|---|---|---|---|---|---|
| Zaire | (15) | (11) | (1) | — | 53 | 9 | 4 | — |
| Ethiopia | 5 | — | — | — | 7 | 2 | 4 | 1.2 |
| Nigeria | 25 | — | — | 0.1 | 30 | 6 | 3 | 2.3 |
| Egypt | 20 | (2) | (1) | 1.7 | 46 | 34 | 18 | 4.6 |
| Argentina | 91 | (62) | (4) | 10.6 | 71 | 40 | 31 | 3.3 |
| Brazil | 61 | (20) | (3) | 2.2 | 46 | 26 | 7 | 1.1 |
| Colombia | 73 | (48) | (6) | 2.8 | 43 | 23 | 12 | 2.2 |
| Mexico | 65 | 26 | 2 | 3.0 | 59 | 21 | 15 | 2.4 |
| Burma | 70 | (3) | — | 0.3 | 34 | 22 | 6 | 2.5 |
| Korea (Republic of) | — | — | — | 2.2 | 63 | 43 | 13 | 1.8 |
| India | 28 | 9 | 3 | 0.2 | 40 | 34 | 8 | 2.6 |
| Indonesia | 43 | 24 | 1 | — | 45 | 17 | 8 | — |
| Iran | 23 | 11 | 2 | 0.3 | 33 | 28 | 6 | 2.5 |
| Pakistan | 19 | 10 | 2 | 0.2 | 21 | 24 | 11 | 1.5 |
| Philippines | 72 | 49 | 8 | 1.5 | 65 | 31 | 43 | 2.6 |
| Thailand | 68 | 38 | 3 | 1.1 | 48 | 12 | 13 | 3.1 |
| Turkey | — | — | — | 1.3 | — | — | — | — |
| Spain | 87 | 72 | 4 | 4.9 | — | — | — | 1.4 |
| Greece | 80 | 47 | 8 | 4.7 | — | — | — | 2.3 |
| Japan | 98 | 97 | 25 | 11.9 | — | — | — | 4.4 |
| France | 96 | — | 8 | 12.6 | — | — | — | 4.1 |
| United Kingdom | — | — | — | 24.8 | — | — | — | 5.1 |
| Sweden | — | — | — | 32.2 | — | — | — | 7.0 |
| United States | 98 | 92 | 33 | 41.9 | — | — | — | 5.3 |
| U.S.S.R. | 98 | — | 26 | 3.2 | — | — | — | 7.3 |

1. Figures in columns 1, 2 and 3 refer to the early 1960s, except those in parentheses which refer to the 1950s.
2. Percentage of the net material product.

*Sources:* United Nations, *Statistical Yearbook 1969* Table 171, New York, N.Y., United Nations, 1970; United Nations, *World Economic Survey, 1969–1970*, Tables A10, A11, New York, N.Y., United Nations, 1971, 248 p.; Unesco, *Statistical Yearbook 1970*, Table 219, Paris, Unesco, 1971.

TABLE 4A. Economic growth from 1960 to 1967 (compound rate between terminal years)

| Country or area | GDP at market prices (compound rate) 1 | Annual rate of increase of population 1963–68 (percentage) 2 | *Per capita* increase in GDP (percentage) 3 | Agri-culture 4 | Industry 5 |
|---|---|---|---|---|---|
| Zaire | 2.4 | 2.2 | — | — | — |
| Ethiopia | 4.6 | 2.0 | — | 1.7 | 10.5 |
| Nigeria | 1.3 | 2.5 | — | 1.3 | 14.4 |
| Egypt | 3.9 | 2.5 | — | — | — |
| Argentina | 3.0 | 1.5 | 1.3 | 1.9 | 4.7 |
| Brazil | 4.6 | 3.0 | 1.5 | — | — |
| Colombia | 4.7 | 3.2 | 1.5 | 3.5 | 5.4 |
| Mexico | 6.3 | 3.5 | — | — | 8.0 |
| Burma | 2.7 | 2.1 | — | 2.9 | 5.6 |
| Korea (Republic of) | 8.5 | 2.5 | 5.6 | 3.6 | 16.0 |
| India | 3.6 | 2.5 | — | 1.4 | 4.7 |
| Indonesia | 2.1 | 2.4 | — | 2.1 | — |
| Iran | 7.8 | 3.0 | 4.8 | 2.8 | 12.6 |
| Pakistan | 5.9 | 2.1 | — | 3.6 | 10.3 |
| Philippines | 4.5 | 3.5 | 1.1 | 4.9 | 5.2 |
| Thailand | 8.1 | 3.1 | — | 3.4 | 11.7 |
| Turkey | 4.2 | 2.5 | — | — | 8.1 |
| Spain | 8.0 | 1 | 5.7 | — | 9.8 |
| Greece | 7.4 | 0.8 | 6.4 | 4.7 | 8.6 |
| Japan | 10.4 | 1.1 | 9.1 | — | — |
| France | 5.6 | 0.9 | 4.3 | 1.0 | 6.4 |
| United Kingdom | 2.9 | 0.6 | 2.3 | 2.4 | 3.0 |
| Sweden | 4.6 | 0.8 | 3.8 | 0.6 | 6.4 |
| United States | 4.8 | 1.2 | 3.6 | 1.4 | 5.1 |
| U.S.S.R. | 7.0 | 1.1 | — | — | 8.8 |
| Africa | 4.7 | | | | |
| Latin America | 4.7 | | | | |
| North America | — | | | | |
| Asia | 5 | | | | |
| Europe | — | | | | |
| Oceania | — | | | | |
| DC(M)s | 5.2 | | | | |
| LDCs | 4.7 | | | | |
| Average | — | | | | |
| DC(P)s | 6.6 | | | | |

*Sources:* United Nations, *Statistical Yearbook 1969*, Tables 16, 79, New York, N.Y., United Nations, 1970; United Nations, *World Economic Survey, 1969–1970* Tables A1, A2, A3, New York, N.Y., United Nations, 1971, 248 p.

TABLE 5A. Production capacity

| Country or area | Unemployment[1] | Gross domestic[2] fixed capital formation, 1966–68 | Gross domestic savings (as percentage of GDP), 1966–68 | Gross foreign savings (Col. 2 – col. 3) | Imports of capital goods (as percentage of total imports), 1966–68 | Imports of capital goods (as percentage of GFCF), 1966–68 | Average annual rate of increase | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | of exports, 1960–67 | of debt service payments, 1960–67 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Zaire | — | 16.0 | 12.3 | 3.7 | 17.6 | 53.3 | 8 | — |
| Ethiopia | — | 13.3 | 9.1 | 4.2 | 26.5 | 21.7 | 6 | 29 |
| Nigeria | 16.5 | 12.3 | 9.2 | 3.1 | 17.3 | 20.5 | 6 | 46 |
| Egypt | 19.6 | 18.8 | 18.0 | 0.8 | 14.1 | 14.8 | 3 | — |
| Argentina | 6.0 | 18.8 | 20.4 | −1.4 | 34.3 | 13.1 | 5 | 6 |
| Brazil | — | 17.1 | 16.0 | 1.1 | 28.7 | 7.7 | 5 | 9 |
| Colombia | — | 16.3 | 14.9 | 3.8 | 27.8 | 15.8 | 2 | 3 |
| Mexico | — | 15.6 | 14.0 | 1.6 | 40.6 | 21.6 | 6 | 12 |
| Burma | — | 7.6 | 3.6 | 4.0 | 31.6 | 44.2 | −8 | — |
| Korea (Republic of) | −3.8 | 24.7 | 18.1 | 7.5 | 37.1 | 20.9 | — | — |
| India | 8.8 | 16.5 | 13.2 | 3.3 | 34.2 | 17.5 | 3 | 22 |
| Indonesia | — | 8.8 | 8.1 | 0.7 | 34.6 | 24.9 | −2 | — |
| Iran | — | 18.9 | 19.2 | −0.3 | 26.8 | 21.1 | 13 | 1 |
| Pakistan | 1.3 | 14.3 | 10.1 | 5.3 | 47.3 | 21.1 | 9 | 24 |
| Philippines | 4.9 | 18.3 | 12.4 | 7.7 | 44.8 | 27.9 | 8 | 33 |
| Thailand | — | 29.2 | 25.8 | 3.4 | 44.8 | 38.0 | 7 | 13 |
| Turkey | — | 17.1 | 15.5 | 1.6 | — | — | — | — |
| Spain | — | 24.4 | 23.1 | 3.9 | — | — | — | — |
| Greece | — | 25.2 | 16.5 | 9.3 | — | — | — | — |
| Japan | — | 32.9 | 38.0 | −0.8 | — | — | — | — |
| France | — | 25.4 | 27.4 | −0.2 | — | — | — | — |
| United Kingdom | — | 19.0 | 20.0 | −0.5 | — | — | — | — |
| Sweden | — | 24.1 | 23.8 | 0.7 | — | — | — | — |
| United States | — | 16.7 | 18.3 | −0.5 | — | — | — | — |
| Africa | — | 15.9 | 16.5 | −0.3 | — | — | — | — |
| Latin America | — | 17.1 | 15.9 | 1.2 | — | — | — | — |
| North America | — | — | — | — | — | — | — | — |
| Asia | — | 17.9 | 16.2 | 1.7 | — | — | — | — |
| Europe | — | — | — | — | — | — | — | — |
| Oceania | — | — | — | — | — | — | — | — |
| DC(M)s | — | 24.0 | 22.4 | 3.0 | — | — | — | — |
| LDCs | — | 17.4 | 16.1 | 1.4 | — | 6 | 9 | — |

1. Annual average rate of increase in registered unemployment (over last 3 to 5 years).
2. As percentage of $GDP_m$ at constant market prices (1960).

*Source:* United Nations, *World Economic Survey, 1969–1970* Tables 35, 41, 45, A12, New York, N.Y., United Nations, 1971, 248 p.

# 3 Answer to the exercises

*Exercise 1:* (a) 300; (b) 150; (c) 200; (d) [illegible]; (e) value added is not affected by the change in organization of production.

*Exercise 2:* (a) 92; (b) 83; (c) 79.

*Exercise 3:* Kuwait is a petroleum-exporting country (X = 61 per cent of GNP), but net external revenue is negative owing to the need to offset investments and activities carried out by foreigners.

*Exercise 4:* 2.81 per cent.

*Exercise 5:* 117 years $\simeq$ 120 years.

*Exercise 6:* (a) 2 per cent; (b) $r_p$ = 50 per cent and $r_y$ = 50 per cent; (c) 3 per cent.

*Exercise 7:* 2; 2.23; 3.

*Exercise 8:* 2 per cent.

*Exercise 9:* (a) Pre-Malthusian; (b) optimum population; (c) Malthusian; (d) catastrophic.

*Exercise 10:* $N_1$, $\lambda > 1$; $N_b$, $\lambda < 1$; $N_c$, $\lambda = 0$; $N_f$, $\lambda < 0$.

*Exercise 11:* (a) 70; (b) 62; (c) 52.

*Exercise 12:* 2.5 per cent.

*Exercise 13:* 1.5 per cent.

*Exercise 14:* 5.6 per cent.

*Exercise 15:* 20 per cent.

*Exercise 16:* (a) 0.25; (b) 0.2; (c) 0.8 and 0.2.

*Exercise 17:* 4.2.

*Exercise 18:* (a) 0.83; (b) −2.5; (c) −1.66.

*Exercise 19:* (a) 1 per cent; (b) 3 per cent.

*Exercise 20:* 6.66.

*Exercise 21:* + 4.

*Exercise 22:* 7 per cent.

*Exercise 23:* 50 per cent.

*Exercise 24:* $r_k$ = 80 per cent; $r_f$ = 20 per cent.

*Exercise 25:* $Y = L^{0.7}K^{0.3}$.

*Exercise 26:* 2.8 per cent.

*Exercise 27:* 3.08 per cent.

# *Bibliography*

*Reference works*

1. United Nations. *Statistical yearbook 1969.* New York, N.Y., United Nations, 1970.
2. United Nations. *World economic survey, 1969–1970.* New York, N.Y., United Nations, 1971. 248 p.
3. Pearson. *Partners in development (report).* New York, N.Y., 1969, 400 p.
4. FAO. *The state of food and agriculture, 1970. Annual report.* 274 p.
5. ——. *Provisional indicative world plan for agricultural development. Summary.* Rome, FAO, 1970. 72 p.
6. OECD. *Agriculture and economic growth.* Paris, OECD, 1965. 124 p.
7. Unesco. *Statistical yearbook 1970.* Paris, Unesco, 1971.

*Other works*

Aron, R. *Dix-huit leçons sur la société industrielle.* Paris, Gallimard, 1962. 375 p.

Baade, F. *La course à l'an 2000.* Paris, Presses Universitaires de France, 1963.

Badouin, R. *Agriculture et accession au développement.* Paris, A. Pédone, 1967. 228 p.

——. *Économie rurale.* Paris, A. Colin, 1971. 598 p.

Bairoch, P. *Diagnostic de l'évolution économique du tiers monde. 1900–66.* Paris, Gauthier-Villars, 1967.

——. *Révolution industrielle et sous-développement.* Paris, SEDES, 1963. 360 p.

Baran, P. *The political economy of growth.* New York, N.Y., Monthly Review, 1957.

Bastianetto, R. *Essai sur le démarrage des pays sous-développés.* Paris, Cujas, 1968. 379 p.

Birou, Alain. *Forces paysannes et politiques agraires en Amérique latine.* Paris, Éditions Ouvrières, 1970. 282 p.

Cépède, Michel; Lengelle, M. *Économie alimentaire du globe, essai d'interprétation.* Paris, Médicis, 1953. 654 p.

Clark, Colin. *The conditions of economic progress.* 3rd ed. London, Macmillan, 1957. 720 p.

Denison, Edward F.; Poullier, J.-P. *Why growth rates differ. Postwar experience in nine Western countries.* Washington, D.C., The Brookings Institution, 1967.

Falkowski, M. *Les problèmes de la croissance du tiers monde.* Paris, Payot, 1968. 221 p.

FAO. *Provisional indicative world plan for agricultural development.* Rome, FAO, 1970. 2 vols., 1 summary.

——. *Report of the Special Committee on Agrarian Reform.* 40 p. (Mimeo.) (FAO document 71/22 dated 15 September 1971.)

——. *The state of food and agriculture* (1965-70). Rome, FAO.

Fourastié, J. *Le grand espoir du XX$^e$ siècle.* Paris, Gallimard, 1963. 372 p.

Furtado, Celso. *Développement et sous-développement.* Paris, Presses Universitaires de France, 1966. 226 p.

Georges, Pierre. *Géographie rurale.* Paris, Presses Universitaires de France, 1963. 360 p.

Gourou, P. *Les pays tropicaux.* Paris, Presses Universitaires de France, 1947.

Hirschmann, A. O. *The strategy of economic development.* New Haven, Conn., Yale University Press, 1959. 217 p. (Yale studies in economics, 10.)

Jalée, Pierre. *Le tiers monde en chiffres.* Paris, Maspéro, 1970. 181 p.

Leroux, H.; Allier, J. P. *Fonctions de production et modèles.* Paris, Ministère de la Coopération, 1963.

Malassis, Louis. *Economic development and the programming of rural education.* 1st ed. Paris, Unesco, 1966. 59 p. (New revised edition in preparation.)

——. *Intellectual investment in agriculture for economic and social development.* Paris, OECD, 1963. 152 p. (Food and agriculture documentation series, 180.)

Mellor, John W. *The economics of agricultural development.* New York, N.Y., Cornell University Press, 1966.

Myint, H. *The economics of developing countries.* London, Hutchinson, 1964. 192 p.

OECD. *Agriculture and economic growth.* Paris, OECD, 1965. 124 p.

——. *Capital and finance in agriculture.* Vol. I: *General Report.* Paris, 1971. 112 p.

Perroux, F. *La coexistence pacifique,* Paris, Presses Universitaires de France, 1958. 3 vol. 666 p.

Rostow, W. W. *The stages of economic growth.* London, Cambridge University Press, 1960. 178 p.

Samuelson, Paul. *Economics, an introductory analysis.* New York, N.Y., McGraw-Hill, 1967.

Sauvy, Alfred. *Malthus et les deux Marx.* Paris, Denoël, 1963. 353 p.

Schumpeter, J. *Capitalism, socialism and democracy.* 3rd ed. London, Harper and Row, 1950.

Stavenhagen, Rodolfo. *Les classes sociales dans les sociétés agraires.* Paris, Anthropos, 1969. 402 p.

Svennilson, *Policy Conference on Economic Growth and Investment in Education.* Paris, OECD, 1962.

Unesco. *World illiteracy at mid-century: a statistical study.* Paris, Unesco, 1957. 200 p. (Monographs on fundamental education, XI.)

United Nations. *World Conference on Agricultural Education and Training. Report.* Copenhagen, FAO/Unesco/ILO, 1970. 2 vols.

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